The MUTOH XP-C Series

Intelligent Cutting Plotter

Maintenance Manual

MUTOH EUROPE N.V.

Part Number : AP-74620

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MUTOH EUROPE N.V.
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APPENDIX
Plotter Component Parts Illustrations

Chapter 1
INTRODUCTION

This manual provides information to assure optimum performance and results from the Mutoh XP-C series cutting plotters.

To isolate malfunctions early and to quickly verify operations, powerful diagnostic software has been built into the Mutoh XP-C series Intelligent Cutting Plotters.

All basic maintenance information is included in this manual. For the necessary details about procedures and functions, see the Mutoh Intelligent Cutting Plotter User Guide.

NOTE :
To simplify explanations, some terminology in this manual has been changed from the terminology in the User Guide and the Parts List.

Chapter 2
SPECIFICATIONS

2.1 General Specifications

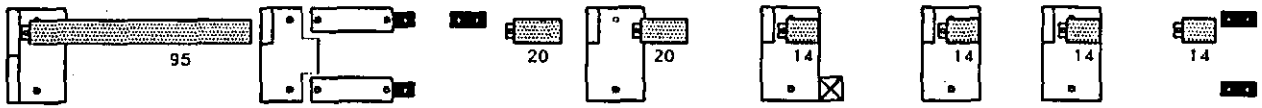
MUTOH XP-C INTELLIGENT	CUTTING PLOTTERS
Type	Micro-grip roll plotter Friction-drive
Cutting/plotting area	XP-620C : 100 - 610 mm XP-940C : 100 - 910 mm XP-1250C : 100 - 1220 mm
Media Length	maximum 50 m
Media Types	various kinds of vinyl film, plotter paper
Maximum Media Thickness	0.25 mm (with backing paper : 0.3 mm)
Maximum speed	900 mm/sec (axial)
Maximum acceleration	4.2 G
Mechanical resolution	0.005 mm
Repeatability	+/- 0.1 mm
End-point accuracy	+/- 0.1 %
Tool up/down capability	40/sec
Number of tools (max.)	8 pens carrousel
Cutting Knife Types	30°, 45°, 60°
Cutter/pen pressure	15 - 450 g
Knife Offset	0.5 mm standard (can be adjusted in 0.01 mm steps)
Pen Type	pencil (0.2/0.3/0.5/0.7 mm), disposable ink, refillable ink, ball point, ceramic, fibre
Knife/pen recognition	automatic/manual
Input buffer	1 MB standard (up to 4 MB - factory-installed)
Interface	RS-232C standard, Centronics (optional)
Graphic Language	MH-GL, MH-GL/2 (HP-GL compatible) MC-GL (Calcomp compatible)
Display	4 x 16 characters (LCD)
Dimensions	XP-620C : 1159 (W) x 604 (D) x 1279 (H) XP-940C : 1446 (W) x 604 (D) x 1279 (H) XP-1250C : 1750 (W) x 604 (D) x 1279 (H)
Weight	XP-620C : 53 kg XP-940C : 63 kg XP-1250C : 74 kg
Options	collecting basket, second roll stocker, various cutting and plotting accessories, buffer extension
Power requirements	AC 90 - 260 V - 50 - 60 Hz, 120 W
Warranty	12 months (on-site)

2.2 Plotter Gridroller Size Specifications

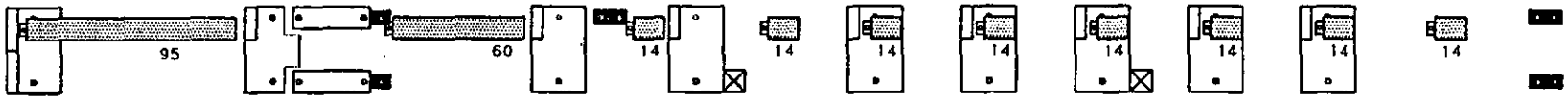
GRIDROLL LENGTH (mm)	XP-620C	XP-940C	XP-1250C
95	1	1	1
60	---	1	1
20	2	---	---
14	4	8	12

Page 2.3 shows the position of the grid rollers on XP-620C, XP-940C and XP-1250C

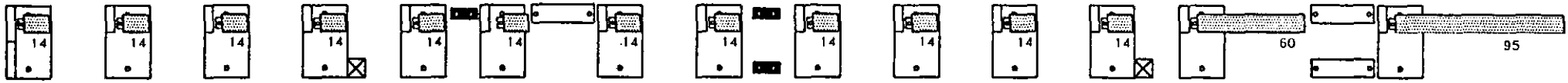
POSITION GRIDROLLERS XP-620C



POSITION GRIDROLLERS XP-940C



POSITION GRIDROLLERS XP-1250C



2.3 Interface Specifications

MUTOH XP-C SERIES CUTTING PLOTTERS	
Standard RS-232C Interface	
Baud Rate (bps)	300 to 19200 and EXT
Format	ASCII
Synchronisation	Start-stop synchronisation
Communication	Full duplex, Half Duplex
Data Length	7 bits, 8 bits
Stop Bits	1 bit, 2 bits
Parity	Even parity, Odd parity, None
Input Buffer	1 MB

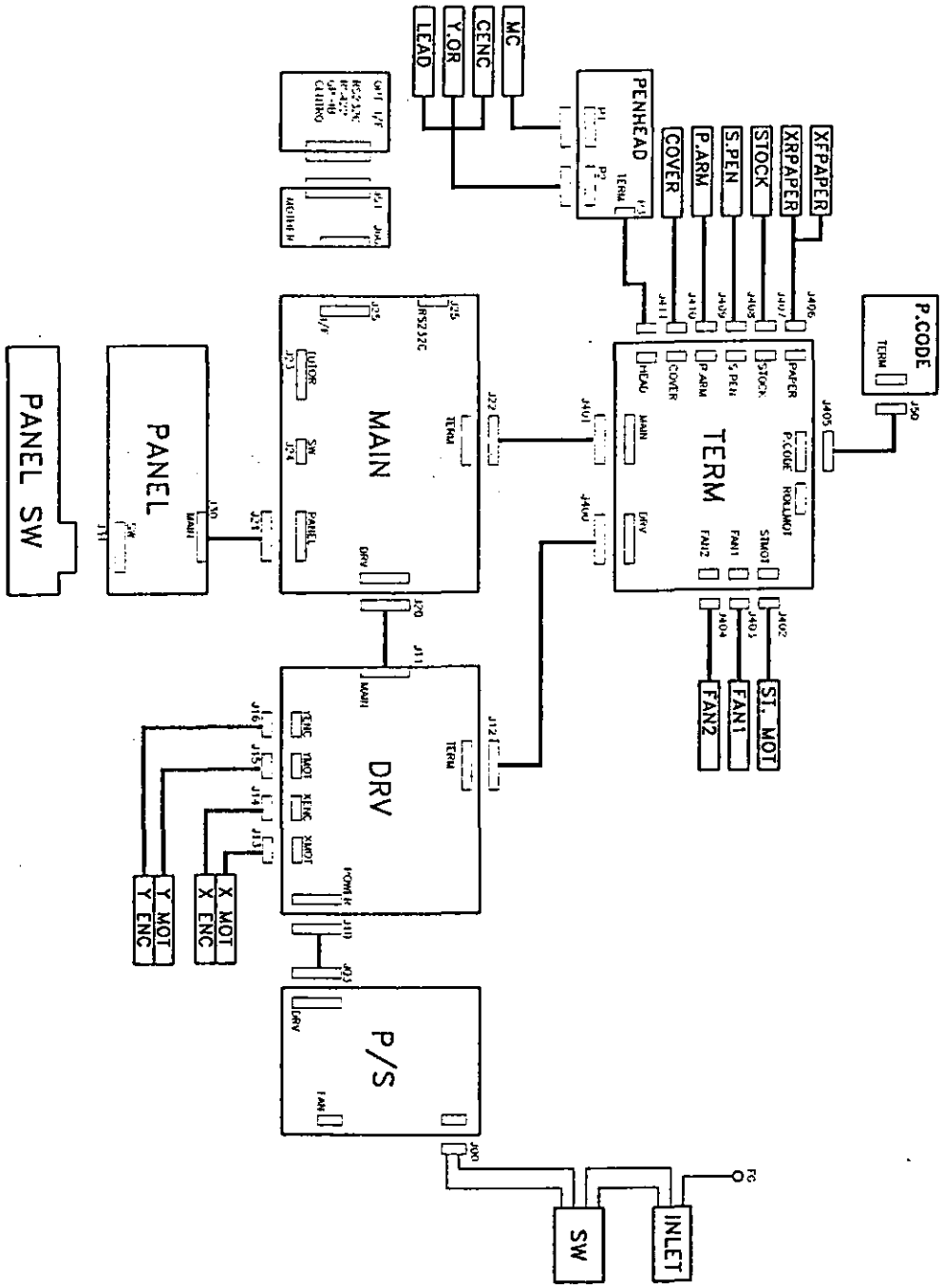
Chapter 3
SYSTEM BLOCK DIAGRAM

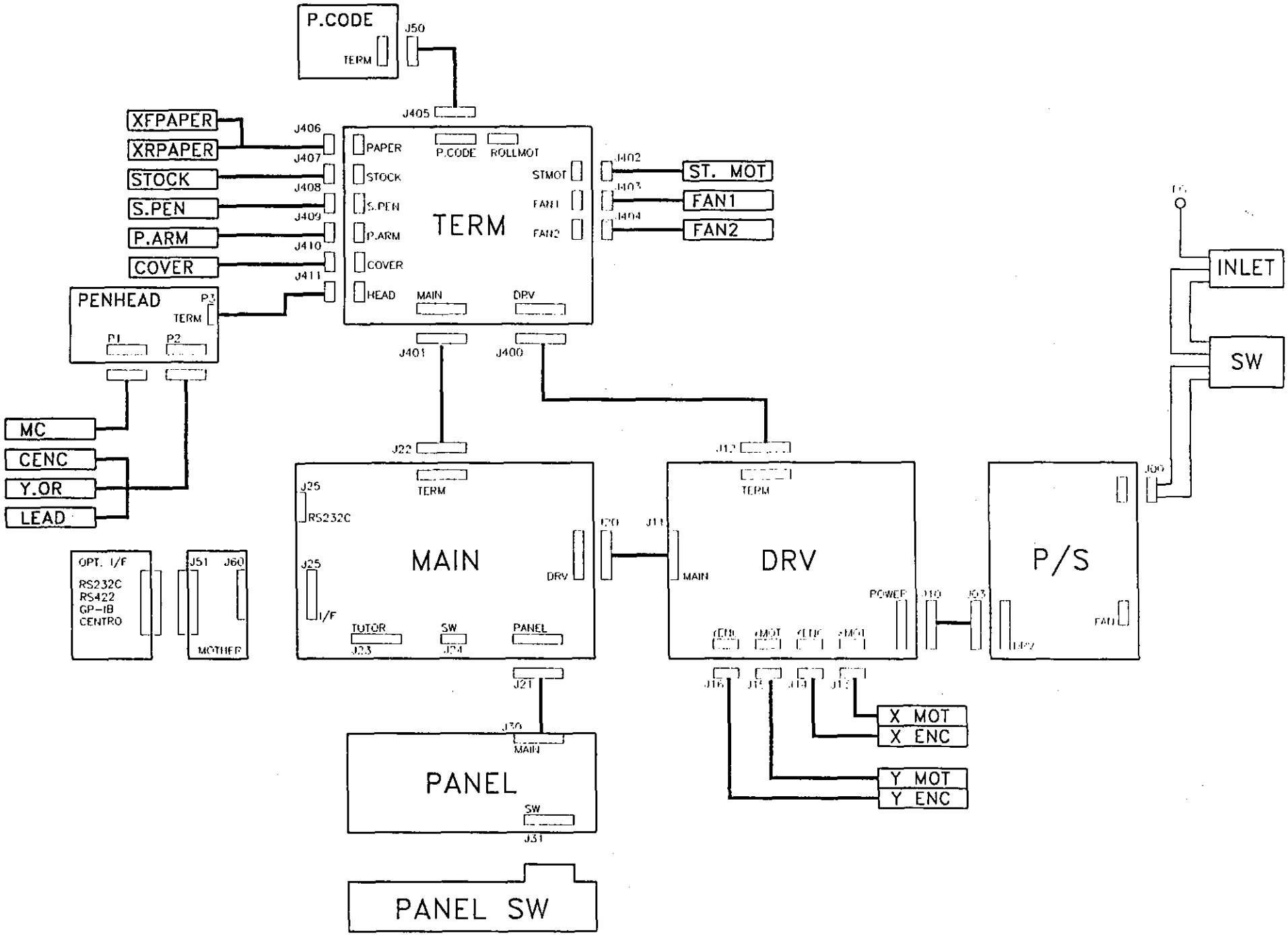
System Block Diagram

Note :

See Chapter 5, "Signal Pin Assignments" for information about connector pin assignments.

Page 3-




P.CODE
TERM
J50
J405
XFPAPER
XRPAPER
STOCK
S.PEN
P.ARM
COVER
J406
J407
J408
J409
J410
J411
PAPER
STOCK
S.PEN
P.ARM
COVER
HEAD
P.CODE
ROLLMOT
MAIN
DRV
TERM
STMOT
FAN1
FAN2
J402
J403
J404
ST. MOT
FAN1
FAN2
PENHEAD
P3
TERM
P1
P2
J401
J400
MC
CENC
Y.OR
LEAD
J22
J12
TERM
J25
RS232C
J25
I/F
TUTOR
J23
SW
J24
PANEL
DRV
MAIN
J20
J11
TERM
MAIN
DRV
POWER
J10
J03
P/S
FAN
J00
INLET
SW
OPT. I/F
RS232C
RS422
GP-IB
CENTRO
J51
J60
MOTHER
J21
J30
MAIN
PANEL
SW
J31
PANEL SW
J16
J15
J14
J13
X MOT
X ENC
Y MOT
Y ENC

Chapter 4
INTERFACES

You can establish an interface by installing a board on the interface bus. Although you can install multiple interfaces, only one interface can be active.

Available interface boards are:

- GP–IB
- Centronics®
- Serial (RS–232C)
- Serial (RS–422A)

4.1 GP-IB (IEEE-488) Interface (Optional)

- Transfer system - Two way
- Data length - 8-bit parallel
- Transmission control system - Handshake system
- Signal level - Conforming to IEEE–488
- Controler LSI-TMS 9914

GP–IB Interface Connector Signals

Pin No.	Abbreviation	Name of Circuit in Connection	I/O for Signal Direction
1	DATA 1	Input Output Data	I/O
2	DATA 2	Input Output Data	I/O
3	DATA 3	Input Output Data	I/O
4	DATA 4	Input Output Data	I/O
5	EOI	End or Identity	I/O
6	DAV	Data Valid	I/O
7	NRFD	Not Ready for Data	I/O
8	NDAC	Not Data Accepted	I/O
9	IFC	Interface Clear	I/O
10	SRQ	Service Requested	I/O
11	ATN	Attention	I/O
12	SHIELD	Shield (FG)	
13	DATA 5	Input Output Data	I/O
14	DATA 6	Input Output Data	I/O
15	DATA 7	Input Output Data	I/O
16	DATA 8	Input Output Data	I/O
17	REN	Remote Enable	I/O
18–19	SG	Signal Ground	

4.2 Centronics Interface (Optional)

- Transfer system - One-way (receiving only)
- Data length - 8-bit parallel
- Transmission control system - Handshake system
- Signal level - TTL level
- Transmission distance - Maximum 2 meters
- Controler LSI-TC 8578AP

Centronics Interface Connector Signals

Pin No.	Abbreviation	Name of Circuit in Connection	I/O for Signal Direction
1	STROBE*	Strobe Input	I
2–9	Data 1~8	Parallel Data Input	I
10	ACK*	Acknowledge Output	O
11	BUSY	Busy	O
12	PAPER END	Paper End	O
13	SELECTED	Selected	O
16	SG	Signal Ground	
17	FG	Frame Ground	
18	HIGH	High Level	O
19–30	SG	Signal Ground	
31		Unused	
32	FAULT	Error	O
33	SG	Signal Ground	

Note: Other pins are put in NC (no contact) status.
Note: Asterisk (*) indicates negative logic.

4.3 RS-232C Interface

1. Transfer format (software selectable)
   - ◆ Synchronous
   - ◆ Asynchronous
2. Communication mode
   - ◆ Full duplex
   - ◆ Half duplex
3. Clock
   - ◆ Internal clock (x1, x16, x64)
   - ◆ External clock (input signal, sampling x 1)
4. Baud rate (software selectable)
   - ◆ 19200 bps
   - ◆ 9600 bps
   - ◆ 4800 bps
   - ◆ 2400 bps
   - ◆ 1200 bps
   - ◆ 600 bps
   - ◆ 300 bps
   - ◆ External clock
5. Data length (software selectable)
   - ◆ 7 bits
   - ◆ 8 bits
6. Stop bits (software selectable)
   - ◆ 1 bit
   - ◆ 2 bits
7. Parity (software selectable)
   - ◆ Odd
   - ◆ Even
   - ◆ None
8. Error detection
   - ◆ Parity error
   - ◆ Framing error
   - ◆ Overrun error
9. External connector
   - ◆ DB–25S (equivalent)
10. Signal level as given by the driver/receiver IC specifications for RS–232C
    - ◆ Driver 75188 (TI, ±12V power supply)
    - ◆ Receiver 75189A
11. Controler LSI
    - ◆ MC 68661P

RS-232C Port Pin Assignments

Pin No.	Signal	Abbr.	I/O For Signal Direction
1	Frame Ground	FG	–
2	Transmitted	TXD	O
3	Received Data	RXD	I
4	Request to Send	RTS	O
5	Clear to Send	CTS	I
6	Data Set Ready	DSR	I
7	Signal Ground	SG	–
8	Carrier Detect	CD	I
9–14	Unused		
15	Transmitter Signal Element Timing	ST	I
16	Unused		
17	Receiver Signal Element Timing	RT	I
18	Data Terminal Ready	DTR	O
19	Unused		
20	Data Terminal Ready	DTR	O
21–25	Unused		

4.4 RS-422A Interface (Optional)

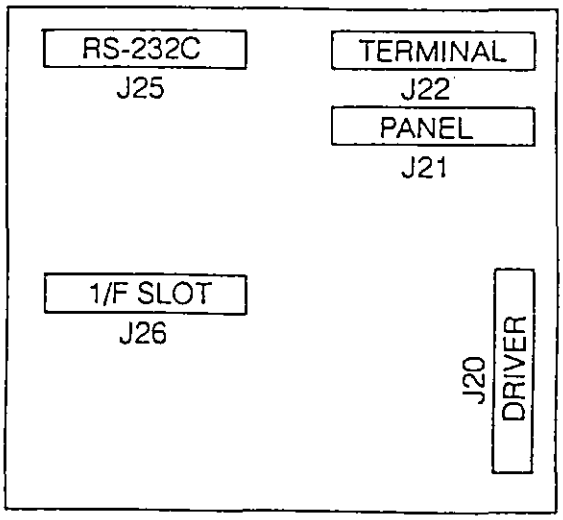
1. Transfer format (software selectable)
   - ◆ Synchronous
   - ◆ Asynchronous system
2. Communication mode
   - ◆ Full duplex
   - ◆ Half duplex
3. Clock
   - ◆ Internal clock (x1, x16, x64)
   - ◆ External clock (Input signal, sampling x 1)
4. Baud rate (software selectable)
   - ◆ 19200 bps
   - ◆ 9600 bps
   - ◆ 4800 bps
   - ◆ 2400 bps
   - ◆ 1200 bps
   - ◆ 600 bps
   - ◆ 300 bps
   - ◆ External clock
5. Data length (software selectable)
   - ◆ 7 bits
   - ◆ 8 bits
6. Stop bits (software selectable)
   - ◆ 1 bit
   - ◆ 2 bits
7. Parity (software selectable)
   - ◆ Odd
   - ◆ Even
   - ◆ None
8. Error detection
   - ◆ Parity error
   - ◆ Framing error
   - ◆ Overrun error
9. External connection connector
   - ◆ DA–15S (equivalent)
10. Signal level as given by the driver/receiver IC specifications for RS–232C
    - ◆ Driver 75174
    - ◆ Receiver 75175
11. Controler LSI
    - ◆ MC 68661P

RS-422A Port Pin Assignments

Pin No.	Signal	Abbr.	I/O for Signal Direction
1	Frame Ground	FG	–
2	Transmitted Data	TXD	O
3	Received Data	RXD	I
4	Request to Send	RTS	O
5	Clear to Send	CTS	I
6	Transmission Signal Element Timing	ST	I
7	Data Terminal Ready	DTR	O
8	Receiver Signal Element Timing	RT	I
9	Transmitted Data	TXD	O
10	Received Data	RXD	I
11	Request to Send	RTS	O
12	Clear to Send	CTS	I
13	Transmitter Signal Element Timing	ST	I
14	Data Terminal Ready	DTR	O
15	Receiver Signal Element Timing	RT	I

Chapter 5
SIGNAL PIN ASSIGNMENTS

5.1 Main Board



5.1.1 J20 Main/Driver Connection

Pin	Signal
1	/LEDON
3	-12V
5	+12Vb
7	ENC OFF
9	YENC-A
11	XENC-A
13	/DRVREV1
15	/DRVREV3
17	AG
19	AG
21	AG
23	AG
25	P DOWN
27	YOVC
29	/C-ON
31	/X-ON
33	C-B
35	C-A
37	Y-B

Pin	Signal
2	/SGAIN
4	-12V
6	+12Vb
8	YENC-B
10	XENC-B
12	/DRVREV0
14	/DRVREV2
16	ERROR
18	LEAD
20	
22	C-CUR
24	/OFFSET
26	COVC
28	XOVC
30	/Y-ON
32	SG
34	SG
36	SG
38	SG

Pin	Signal
39	Y-A
41	X-B
43	X-A
45	+5V
47	+5V
49	SG

Pin	Signal
40	SG
42	SG
44	SG
46	+5V
48	+5V
50	SG

Connector

	Part #	Manufacturer
PCB	3433-6002LCSC	Sumitomo 3M Limited
Cable	7950-B500FL	Sumitomo 3M Limited
Strain	3448-7950	Sumitomo 3M Limited

Cable
Flat Cable AWG#28 UL2935

Pin Location

Connector Top View

5.1.2 J21 Main/Panel Connection

Pin	Signal
1	FG
3	PA1
5	PD31
7	PD29
9	PD27
11	PD25
13	SG
15	/PRESET
17	/PREAD
19	+5V
21	+5V
23	SG
25	SG

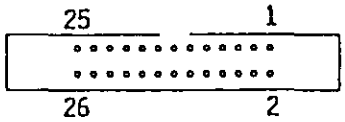
Pin	Signal
2	
4	PA0
6	PD30
8	PD28
10	PD26
12	PD24
14	/PDS
16	/PANEL
18	/LCD
20	+5V
22	+5V
24	SG
26	SG

Connector

	Part #	Manufacturer
PCB	3429-6002LCSC	Sumitomo 3M Limited
Cable	7926-B500SC	Sumitomo 3M Limited
Strain	3448-7926	Sumitomo 3M Limited

Cable
Flat Cable AWG#28 UL2935

Pin Location



Connector Top View

5.1.3 J22 Main/Terminal Connection

Pin	Signal
1	FG
3	TA3
5	TA1
7	TD31
9	TD29
11	TD27
13	TD25
15	
17	/TDS
19	/TREAD
21	/TERM
23	/TRESET
25	TCENC-B
27	
29	

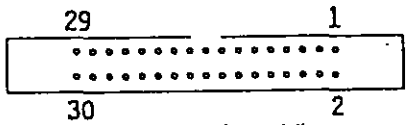
Pin	Signal
2	
4	TA2
6	TA0
8	TD30
10	TD28
12	TD26
14	TD24
16	SG
18	SG
20	SG
22	SG
24	TCENC-A
26	SG
28	
30	

Connector

	Part #	Manufacturer
PCB	3440-6002LCSC	Sumitomo 3M Limited
Cable	7930-B500SC	Sumitomo 3M Limited
Strain	3448-7930	Sumitomo 3M Limited

Cable
Flat Cable AWG#28 UL2935

Pin Location



Connector Top View

5.1.4 J26 Main/Mother Board Connection

Pin	Signal
1	FG
3	SA3
5	SA1
7	SD31
9	SD29
11	SD27
13	SD25
15	/SDS
17	/SRESET
19	/SIRQ4
21	SCK4M
23	SCK4.91M
25	SG
27	+5V
29	+5V
31	SG

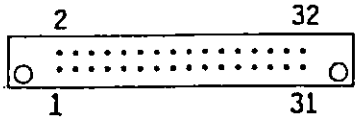
Pin	Signal
2	SA4
4	SA2
6	SA0
8	SD30
10	SD28
12	SD26
14	SD24
16	/SREAD
18	/SSLOT2
20	SG
22	SG
24	SG
26	SG
28	+5V
30	+5V
32	SG

Connector

	Part #	Manufacturer
PCB	128A-032S2A-S14A	DDK*
Mother Board	128A-032P2A-L14A	DDK*

* Dai-ichi Denshi Kogyo K.K. (DDK)

Pin Location



Connector Top View

5.1.5 J25 Main/RS-232C Connection

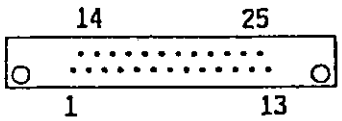
Pin	Signal
1	FG
2	TXD
3	RXD
4	RTS
5	CTS
6	DSR
7	SG
8	
9	
10	
11	
12	
13	

Pin	Signal
14	
15	ST
16	
17	RT
18	DTR2
19	
20	DTR1
21	
22	
23	
24	
25	

Connector

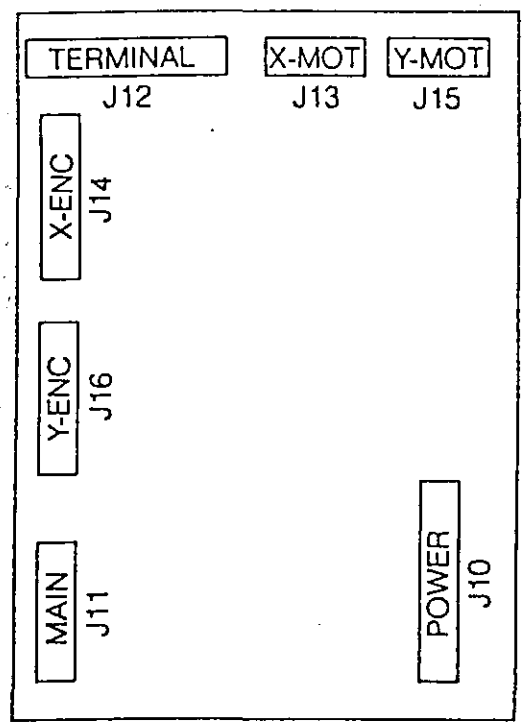
	Part #	Manufacturer
PCB	3712-6022UA	Sumitomo 3M Limited

Pin Location



Connector Top View

5.2 Driver Board



5.2.1 J10 Driver/Power Connection

Pin	Signal	Color
1	+5V	Red
2	+5V	Red
3	SG	Black
4	SG	Black
5	+12Va	Orange
6	+40V	Yellow
7	FG	Green
8	-12V	Blue
9	AG	Black
10	+12Vb	Orange
11	PG1	Black
12	PG2	Black

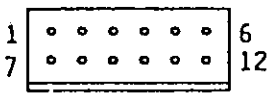
Connector

	Part #	Manufacturer
PCB	5566-12A	Molex Japan Co., Ltd.
Cable	5557-12R	Molex Japan Co., Ltd.
Terminal	5556TL	Molex Japan Co., Ltd.

Cable

AWG#18 UL1015

Pin Location



Connector Top View

5.2.2 J12 Driver/Terminal Connection

Pin	Signal	Color
1	+5V	Red
2	SG	Black
3	+12V	Orange
4	PG1	Black
5	+MC	White
6	-MC	White
7	FG	Green
8	LEAD	Brown
9	/LED	Gray

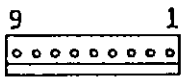
Connector

	Part #	Manufacturer
PCB	B9P-VH	JST*
Cable	VHR-9N	JST*
Contact	SVH-21T-1.1	JST*

*Japan Solderless Terminal Manufacturing Co., Ltd.

Cable
AWG#18 UL1015

Pin Location



Connector Top View

5.2.3 J11 Driver/Main Connection

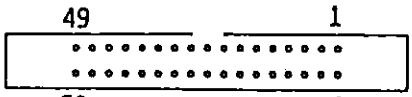
Pin	Signal	Pin	Signal
1	/LEDON	2	/SGAN
3	-12V	4	-12V
5	+12Vb	6	+12Vb
7	ENC OFF	8	YENC-B
9	YENC-A	10	XENC-B
11	XENC-A	12	/DRVREV0
13	/DRVREV1	14	/DRVREV2
15	/DRVREV3	16	ERROR
17	AG	18	LEAD
19	AG	20	
21	AG	22	C-CUR
23	AG	24	/OFFSET
25	P DOWN	26	COVC
27	YOVC	28	XOVC
29	/C-ON	30	/Y-ON
31	/X-ON	32	SG
33	C-B	34	SG
35	C-A	36	SG
37	Y-B	38	SG
39	Y-A	40	SG
41	X-B	42	SG
43	X-A	44	SG
45	+5V	46	+5V
47	+5V	48	+5V
49	SG	50	SG

Connector

	Part #	Manufacturer
PCB	7850-0000T	Sumitomo 3M Limited

Cable
Flat Cable AWG#28 UL2935

Pin Location



Connector Top View

5.2.4 J14 Driver/X-ENC Connection

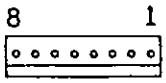
Pin	Signal	Color
1	ENC-A	White
2	ENC-B	Yellow
3	+5V	Red
4	SG	Black
5	FG	Shield
6	ENC-INA	Black
7	ENC-INX	Black
8	NC	

Connector

	Part #	Manufacturer
PCB	171825-8	AMP (Japan), Ltd.
Cable	171822-8	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#28 UL2965

Pin Location



Connector Top View

5.2.5 J16 Driver/Y-ENC Connection

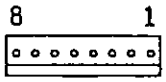
Pin	Signal	Color
1	ENC-A	White
2	ENC-B	Yellow
3	+5V	Red
4	SG	Black
5	FG	Shield
6	ENC-INA	Black
7	NC	
8	ENC-INY	Black

Connector

	Part #	Manufacturer
PCB	171825-8	AMP (Japan), Ltd.
Cable	171822-8	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#28 UL2965

Pin Location



Connector Top View

5.2.6 J13 Driver/X-Motor Connection

Pin	Signal	Color
1	–	White
2	+	Black
3	NC	NC

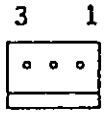
Connector

	Part #	Manufacturer
PCB	B3P-VH	JST*
Cable	VHR-3N	JST*
Contact	SVH-21T-1.1	JST*

Cable
AWG#20 UL1007

*Japan Solderless Terminal Manufacturing Co., Ltd.

Pin Location



Connector Top View

5.2.7 J15 Driver/Y-Motor Connection

Pin	Signal	Color
1	–	White
2	NC	NC
3	+	Black

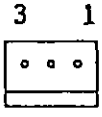
Connector

	Part #	Manufacturer
PCB	B3P-VH	JST*
Cable	VHR-3N	JST*
Contact	SVH-21T-1.1	JST*

Cable
AWG#20 UL1007

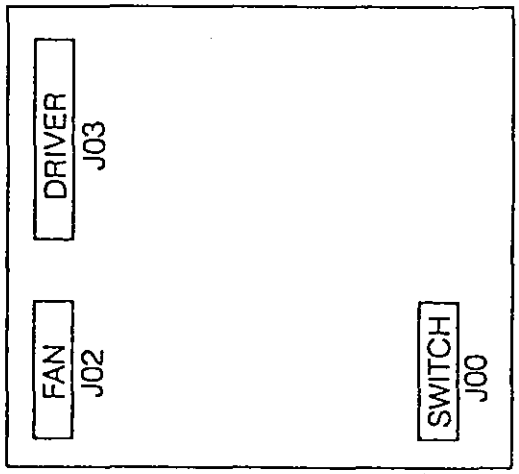
*Japan Solderless Terminal Manufacturing Co., Ltd.

Pin Location



Connector Top View

5.3 Power Supply Board



5.3.1 J00 Power/AC Switch Connection

Pin	Signal	Color
1	Live	Black
2	Neutral	White

Connector

	Part #	Manufacturer
PCB	5219-2A	Molex Japan Co., Ltd.
Cable	3191-2R1	Molex Japan Co., Ltd.
Terminal	1381AT	Molex Japan Co., Ltd.

Cable
AWG#18 UL1672

Pin Location

Connector Top View

5.3.2 J02 Power/Fan Connection

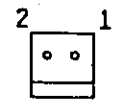
Pin	Signal	Color
1	+12V	Red
2	SG	Black

Connector

	Part #	Manufacturer
PCB	171825-2	AMP (Japan), Ltd.
Cable	171822-2	AMP (Japan), Ltd.
Contact	170204-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location



Connector Top View

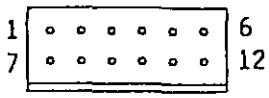
5.3.3 J03 Power/Driver Connection

Pin	Signal	Color
1	+5V	Red
2	+5V	Red
3	SG	Black
4	SG	Black
5	+12Va	Orange
6	+40V	Yellow
7	FG	Green
8	-12V	Blue
9	AG	Black
10	+12Vb	Orange
11	PG1	Black
12	PG2	Black

	Part #	Manufacturer
PCB	5566-12A	Molex Japan Co., Ltd.
Cable	5557-12R	Molex Japan Co., Ltd.
Terminal	5556TL	Molex Japan Co., Ltd.

Connector

Pin Location

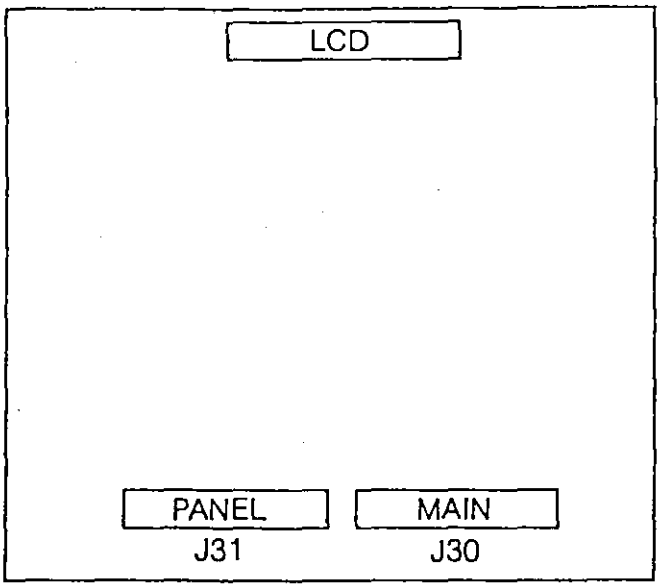


Connector Top View

Cable

AWG#18 UL1015

5.4 Panel Board



5.4.1 J30 Panel/Main Connection

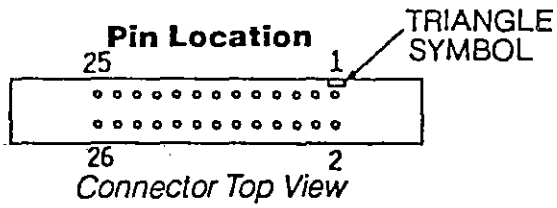
Pin	Signal	Pin	Signal
1	FG	2	
3	PA1	4	PA0
5	PD31	6	PD30
7	PD29	8	PD28
9	PD27	10	PD26
11	PD25	12	PD24
13	SG	14	/PDS
15	/PRESET	16	/PANEL
17	/PREAD	18	/LCD
19	+5V	20	+5V
21	+5V	22	+5V
23	SG	24	SG
25	SG	26	SG

Connector

Part #	Manufacturer
7826-0000T	Sumitomo 3M Limited

Cable

Flat Cable AWG#28 UL2935



Connector Top View

5.4.2 J31 Panel/Panel SW Connection

Pin	Signal
1	FG
3	
5	9
7	–
9	F2
11	F4
13	1
15	3
17	5
19	7
21	MENU ▲
23	CE
25	REMOTE
27	SG

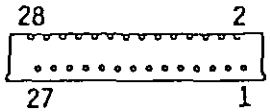
Pin	Signal
2	SG
4	8
6	.
8	F1
10	F3
12	0
14	2
16	4
18	6
20	MENU ▼
22	ENTER
24	EXIT
26	
28	FG

Connector

Part #	Manufacturer
5597-28APB	Molex Japan Co., Ltd.

Cable
Flexible Cable

Pin Location



Connector Top View

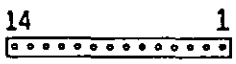
5.4.3 Panel/LCD Connection

Pin	Signal
1	VSS
2	VDD
3	VO
4	RS
5	/WR
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7

Connector

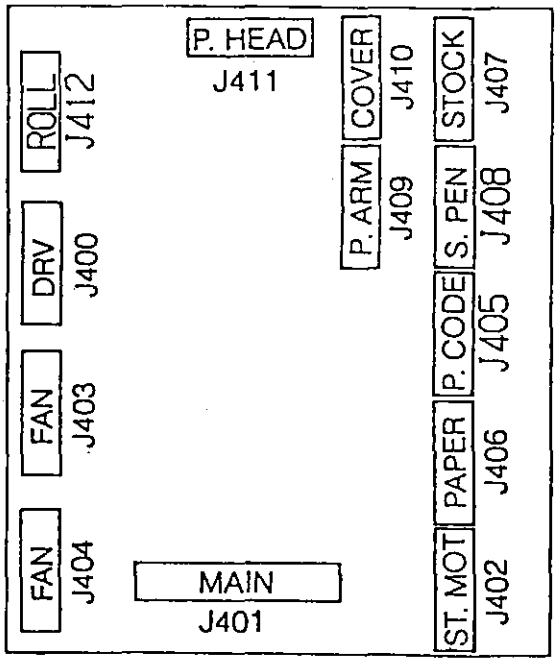
Part #	Manufacturer
UFP-14A-02#4	Yamaichi Electric Mfg. Co., Ltd.

Pin Location



Connector Top View

5.5 Terminal Board



5.5.1 J400 Terminal/Driver Connection

Pin	Signal	Color
1	+5V	Red
2	SG	Black
3	+12V	Orange
4	PG1	Black
5	+MC	White
6	-MC	White
7	FG	Green
8	LEAD	Brown
9	/LED	Gray

Connector

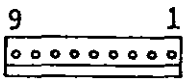
	Part #	Manufacturer
PCB	B9P-VH	JST*
Cable	VHR-9N	JST*
Contact	SVH-21T-1.1	JST*

* Japan Solderless Terminal Manufacturing Co., Ltd.

Cable

AWG#18 UL1015

Pin Location



Connector Top View

5.5.2 J401 Terminal/Main Connection

Pin	Signal
1	FG
3	TA3
5	TA1
7	TD31
9	TD29
11	TD27
13	TD25
15	
17	/TDS
19	/TREAD
21	/TERM
23	/TRESET
25	TCENC-B
27	
29	

Pin	Signal
2	
4	TA2
6	TA0
8	TD30
10	TD28
12	TD26
14	TD24
16	SG
18	SG
20	SG
22	SG
24	TCENC-A
26	SG
28	
30	

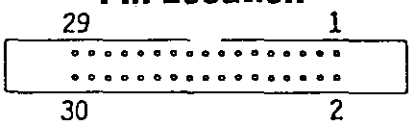
Connector

	Part #	Manufacturer
PCB	3440-6002LCSC	Sumitomo 3M Limited
Cable	7910-B500SC	Sumitomo 3M Limited
Strain	3448-7930	Sumitomo 3M Limited

Cable

Flat Cable AWG#28 UL2935

Pin Location



Connector Top View

5.5.3 J411 Terminal/Pen Head Connection

Pin	Signal
1	FG
2	CENC-A
3	CENC-B
4	SG
5	COIL-A
6	COIL-B
7	Y.OR
8	+5V
9	LEAD
10	/LED

Connector

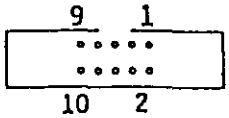
	Part #	Manufacturer
PCB	3662-6002LCSC	Sumitomo 3M Limited
Cable	7910-B500FL	Sumitomo 3M Limited
Strain	3448-7910	Sumitomo 3M Limited

Cable

Flat Cable 10P

(Junkosha Co., Ltd.)

Pin Location



Connector Top View

5.5.4 J402 Terminal/Stocker Motor Connection

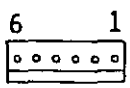
Pin	Signal	Color
1	A	Red
2	AC	Black
3	/A	Yellow
4	B	Orange
5	BC	White
6	/B	Blue

Connector

	Part #	Manufacturer
PCB	171825-6	AMP (Japan), Ltd.
Cable	171822-6	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location



Connector Top View

5.5.5 J403 Terminal/Fan 1 Connection
J404 Terminal/Fan 2 Connection

Pin	Signal	Color
1	12V	Red
2	L/H	Brown
3	GND	Black

Connector

	Part #	Manufacturer
PCB	171825-3	AMP (Japan), Ltd.
Cable	171822-3	AMP (Japan), Ltd.
Contact	170204-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location

Connector Top View

5.5.6 J405 Terminal/P. Code Connection

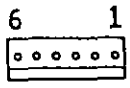
Pin	Signal	Color
1	5V	Red
2	P.CODE0	Yellow
3	P.CODE1	Gray
4	P.CODE2	Blue
5	P.CODE3	Violet
6	SG	Black

Connector

	Part #	Manufacturer
PCB	171825-6	AMP (Japan), Ltd.
Cable	171822-6	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location



Connector Top View

5.5.7 J406 Terminal/Paper Connection

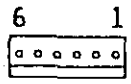
Pin	Signal	Color
1	+5V	Red
2	P.XR	Yellow
3	SG	Black
4	+5V	Red
5	P.XF	Yellow
6	SG	Black

Connector

	Part #	Manufacturer
PCB	171825-6	AMP (Japan), Ltd.
Cable	171822-6	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location



Connector Top View

5.5.8 J407 Terminal/Stocker Connection
J408 Terminal/S. Pen Connection
J409 Terminal/P. Arm Connection

Pin	Signal	Color
1	+5V	Red
2	VO	Gray
3	SG	Black

Connector

	Part #	Manufacturer
PCB	171825-3	AMP (Japan), Ltd.
Cable	171822-3	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location

Connector Top View

5.5.9 J410 Terminal/Cover Connection

Pin	Signal	Color
1	VO	Yellow
2	GND	Black

Connector

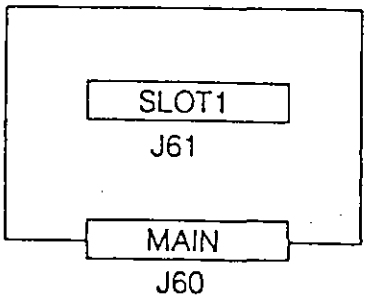
	Part #	Manufacturer
PCB	171825-2	AMP (Japan), Ltd.
Cable	171822-2	AMP (Japan), Ltd.
Contact	170205-1	AMP (Japan), Ltd.

Cable
AWG#26 UL1007

Pin Location

Connector Top View

5.6 Mother Board



5.6.1 J60 Mother Board/Main Connection

Pin	Signal
A1	FG
A2	SA3
A3	SA1
A4	SD31
A5	SD29
A6	SD27
A7	SD25
A8	/SDS
A9	/SRESET
A10	/SIRQ4
A11	SCK4M
A12	SCK4.91M
A13	SG
A14	+5V
A15	+5V
A16	SG

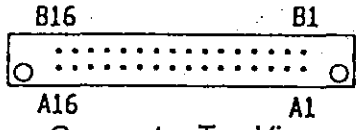
Pin	Signal
B1	SA4
B2	SA2
B3	SA0
B4	SD30
B5	SD28
B6	SD26
B7	SD24
B8	/SREAD
B9	/SSLOT2
B10	SG
B11	SG
B12	SG
B13	SG
B14	+5V
B15	+5V
B16	SG

Connector

	Part #	Manufacturer
PCB	128A-032P2A-L14A	DDK*
Main	128A-032S2A-S14A	DDK*

* Dai-ichi Denshi Kogyo K.K.

Pin Location



Connector Top View

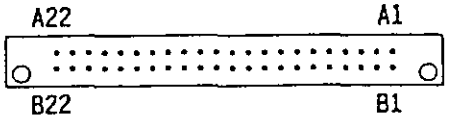
5.6.2 J61 Mother Board/Interface Connection

Pin	Signal	Pin	Signal
A1	FG	B1	SA4
A2	SA3	B2	SA2
A3	SA1	B3	SA0
A4	SD31	B4	SD30
A5	SD29	B5	SD28
A6	SD27	B6	SD26
A7	SD25	B7	SD24
A8	/SDS	B8	SG
A9	/SREAD	B9	SG
A10	/SRESET	B10	SG
A11	/SSLOT2	B11	SG
A12	SG	B12	SG
A13	/SIRQ4	B13	SG
A14	SCK4M	B14	SG
A15	SCK4.91M	B15	SG
A16	+5V	B16	+5V
A17	+5V	B17	+5V
A18	+5V	B18	+5V
A19	+5V	B19	+5V
A20	SG	B20	SG
A21	SG	B21	SG
A22	SG	B22	SG

Connector

	Part #	Manufacturer
PCB	XC5B-4421	OMRON Corp.
I/F Side	XC5A-4422	OMRON Corp.

Pin Location



Connector Top View

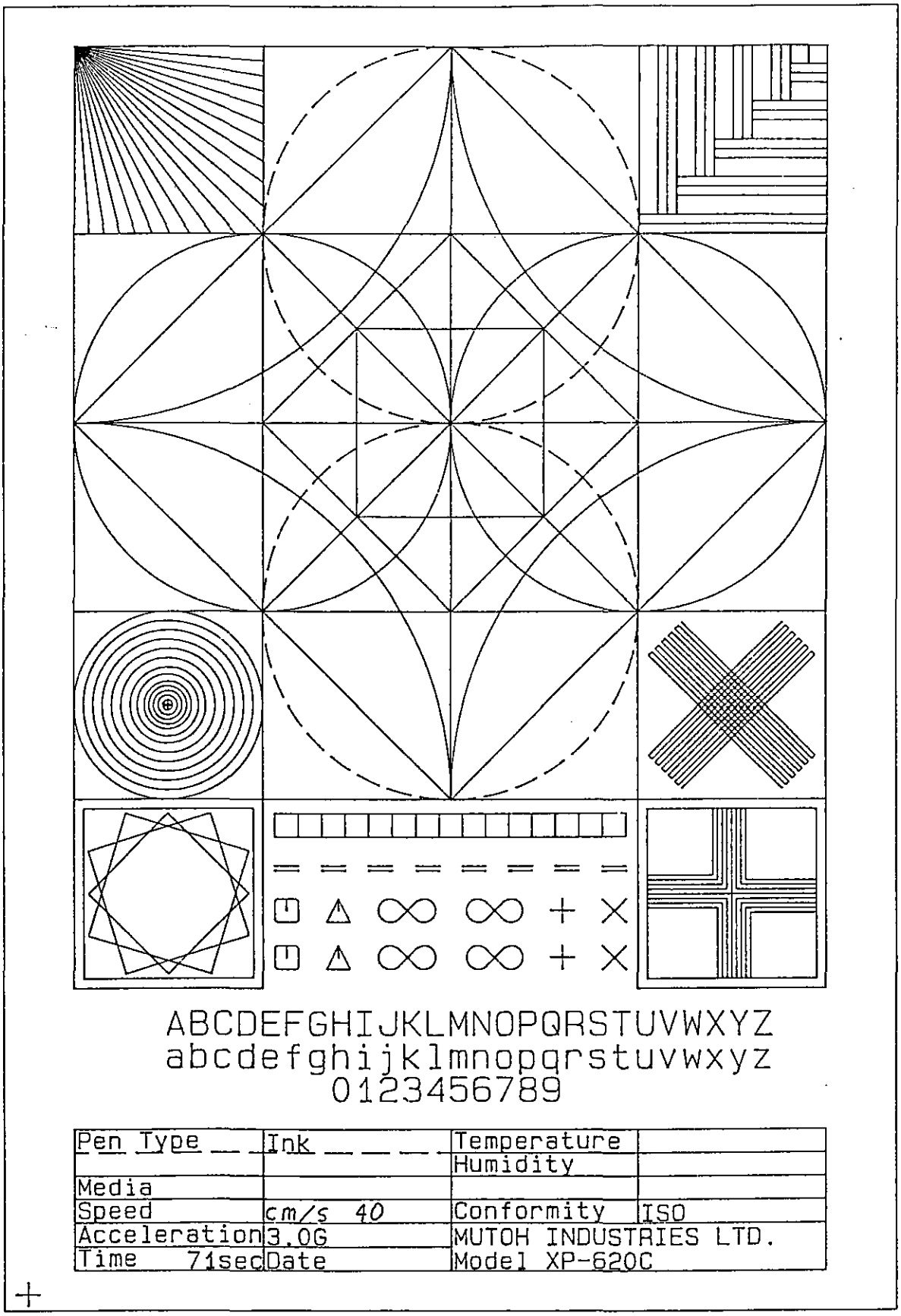
Chapter 6
TEST PLOTTING

There are two kinds of test plotting :

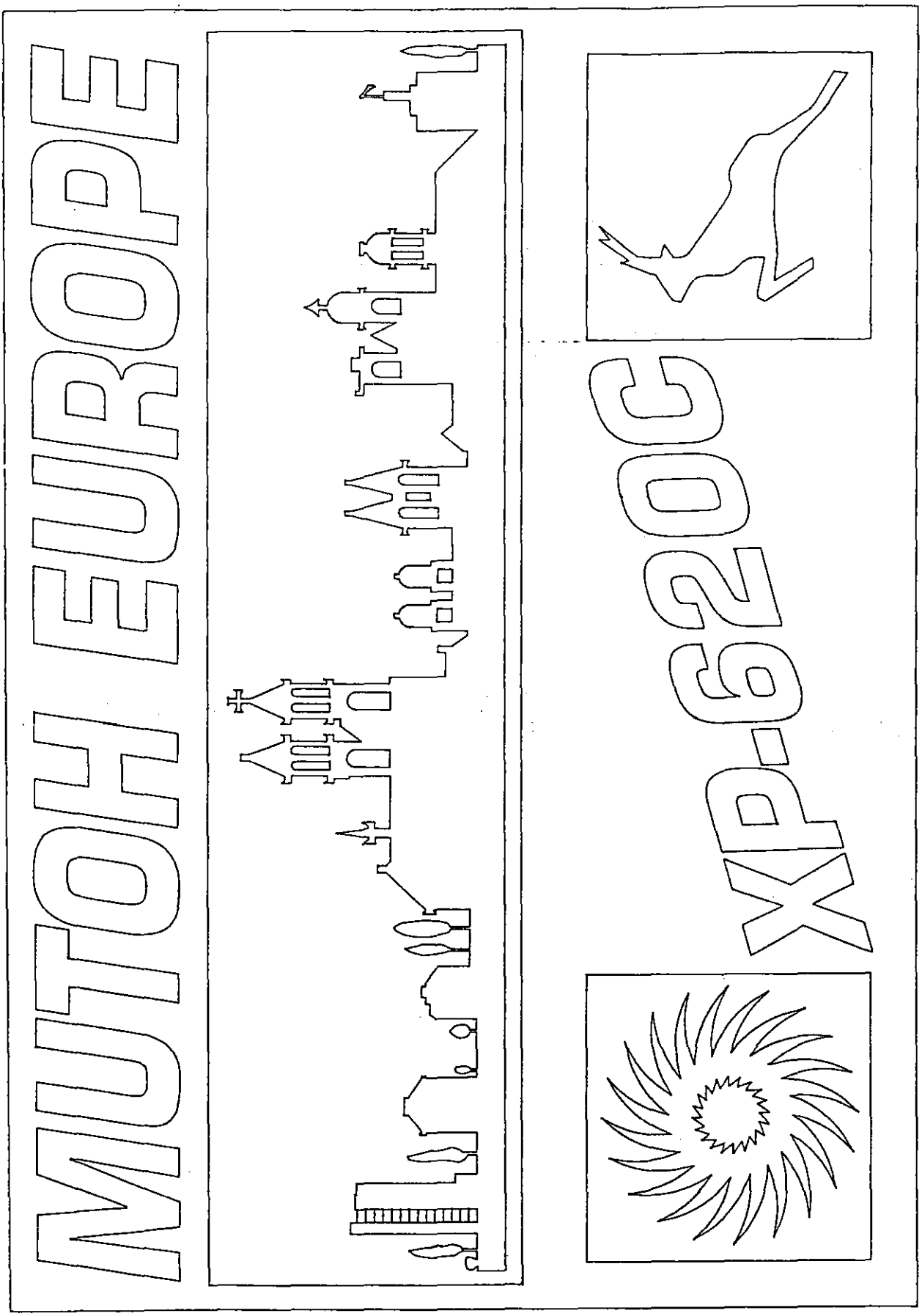
- Standard test plots the user can select from the menu.
- Specialized test plots that are designed for use by maintenance professionals (XY movement-total pattern).

6.1 Standard Test Plots (see User Guide)

- Test pattern plotting - plots an ISO pattern to indicate plotting conditions on the plotting media.
- Test pattern cutting is used to test and confirm cutting quality of the cutting plotter.



Sample Test Pattern Plot

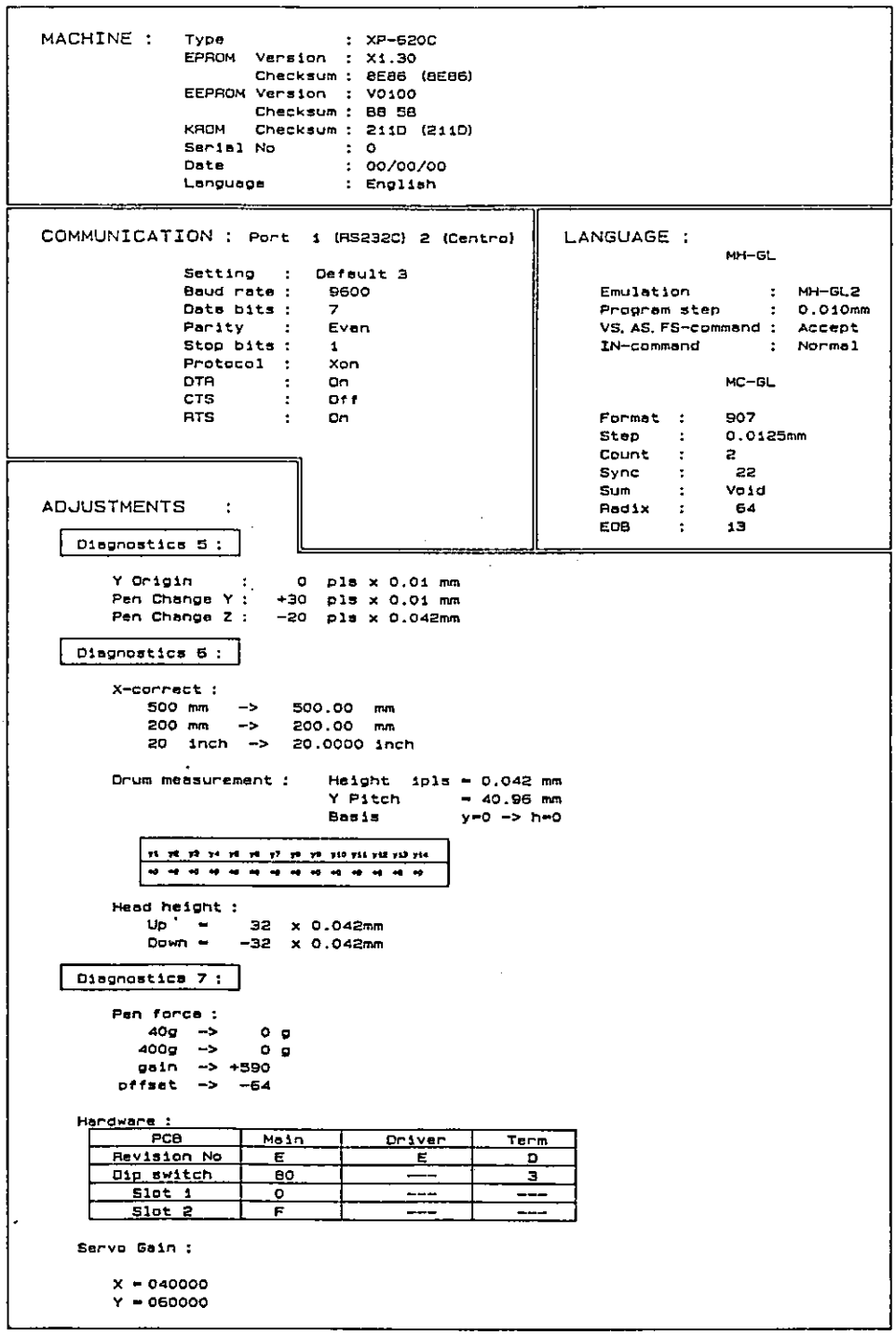


Sample Test Pattern Cutting

6.2 Specialized Test Plots

- Plots details of items such as the backup parameters and adjustment values characteristic of this machine. Specific diagnostics must be run to plot this pattern.

For details, see Section 8.3.12.3 "Total Plotting" in this manual.



MACHINE :
Type : XP-620C
EPROM Version : X1.30
Checksum : 8E86 (8E86)
EEPROM Version : V0100
Checksum : 88 58
KROM Checksum : 211D (211D)
Serial No : 0
Date : 00/00/00
Language : English

COMMUNICATION : Port 1 (RS232C) 2 (Centro)
Setting : Default 3
Baud rate : 9600
Data bits : 7
Parity : Even
Stop bits : 1
Protocol : Xon
DTR : On
CTS : Off
RTS : On

LANGUAGE :
MH-GL
Emulation : MH-GL2
Program step : 0.010mm
VS, AS, FS-command : Accept
IN-command : Normal
MC-GL
Format : 907
Step : 0.0125mm
Count : 2
Sync : 22
Sum : Void
Radix : 64
EOB : 13

ADJUSTMENTS :

Diagnostics 5 :
Y Origin : 0 pls x 0.01 mm
Pen Change Y : +30 pls x 0.01 mm
Pen Change Z : -20 pls x 0.042mm

Diagnostics 6 :
X-correct :
500 mm -> 500.00 mm
200 mm -> 200.00 mm
20 inch -> 20.0000 inch

Drum measurement : Height 1pls = 0.042 mm
Y Pitch = 40.96 mm
Basis y=0 -> h=0

Head height :
Up = 32 x 0.042mm
Down = -32 x 0.042mm

Diagnostics 7 :
Pen force :
40g -> 0 g
400g -> 0 g
gain -> +590
offset -> -64

Hardware :

PCB	Main	Driver	Term
Revision No	E	E	D
Dip switch	80	---	3
Slot 1	0	---	---
Slot 2	F	---	---

Servo Gain :
X = 040000
Y = 060000

Total Plotting Diagnostics

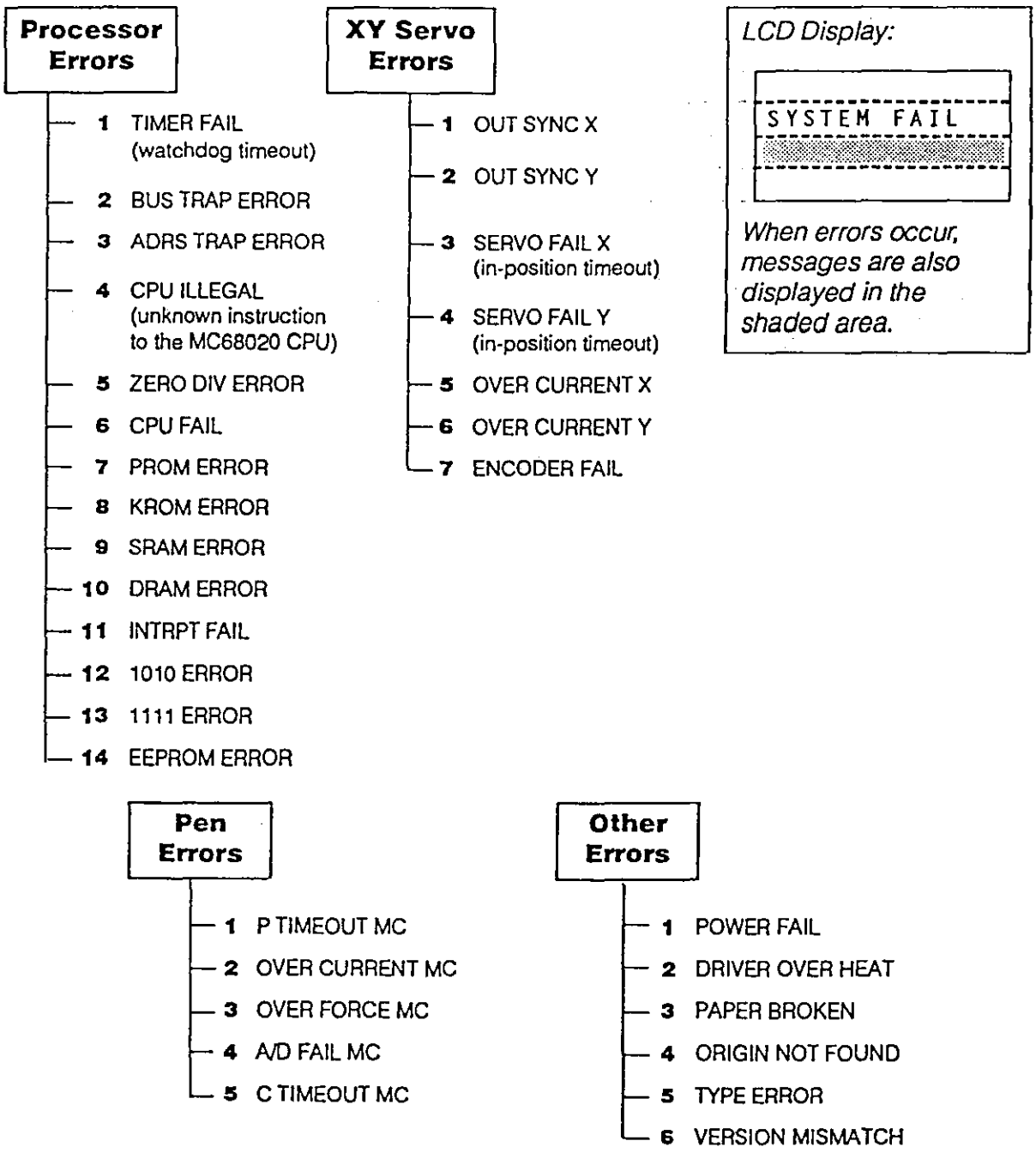
Chapter 7
TROUBLESHOOTING

Error types are classified as recoverable and non-recoverable.

For further information, see the sections "Plotter Maintenance and Troubleshooting" and "Error Messages" of the MUTOH XP-C Series Intelligent Cutting Plotter User Guide.

7.1 Non-recoverable Errors and Error Messages

The numbers in the figure below correspond to the tables that follow.



7.1.1 Processor Errors

	Message	Probable Cause	Action
1	**TIMER FAIL** (watchdog timeout)	• Defective contact between main board and a peripheral connector	• Check connector
2	**BUS TRAP ERROR**	• Defective PROM contact	• Reseat PROM
3	**ADRS TRAP ERROR**	• Defective EEPROM contact	• Reseat EEPROM
4	**CPU ILLEGAL** (unknown instruction to the MC68020 CPU)	• Defective main board	• Replace main board
5	**ZERO DIV ERROR**		
6	**CPU FAIL**		
7	**PROM ERROR**		
8	**KROM ERROR**		
9	**SRAM ERROR**		
10	**DRAM ERROR**		
11	**INTRPT FAIL**		
12	**1010 ERROR**		
13	**1111 ERROR**		
14	**EEPROM ERROR**	• Destrucion of EEPROM data • Perform self-diagnosis and initialize EEPROM	• Destrucion of EEPROM data •Replace EEPROM

Note: Numbers correspond to the figure in section 7.1.

7.1.2 XY Servo Errors

	Message	Probable Cause	Action
1	**OUT SYNC X** An OUT SYNC X error occurs when the difference between the current X position and the target X position (the error counter value) exceeds a certain range.	• Defective motor	• Replace motor (including defective encoder)
		• Failure in driver circuit	• Replace driver board
		• Failure in servo circuit	• Replace driver board
		• Failure in servo power supply	• Replace power board
		• Cable broken	• Replace cable
		• Obstacle	• Remove obstacle
2	**OUT SYNC Y** A OUT SYNC Y error occurs when the difference between the current Y position and the target Y position (the error counter value) exceeds a certain range.	• Same as OUT SYNC X	• Same as OUT SYNC X
3	**SERVO FAIL X** In-position is not turned on even if a fixed time has passed since the NC operation ended.	• Same as OUT SYNC X	• Same as OUT SYNC X
4	**SERVO FAIL Y** In-position is not turned on even if a fixed time has passed since the NC operation ended.	• Same as OUT SYNC X	• Same as OUT SYNC X
5	**OVER CURRENT X** Over current on X bit (timer supervision)	• Defective motor	• Replace motor
		• Failure in driver circuit	• Replace driver board
		• Defective contact between power board connector J03 and driver board connector J10	• Remove and reattach connector. If still not working correctly, replace cable
6	**OVER CURRENT Y** Over current on Y bit (timer supervision)	• Defective motor	• Replace motor
		• Failure in driver circuit	• Replace driver board

7.1.2 XY Servo Errors (continued)

	Message	Probable Cause	Action
7	**ENCODER FAIL** If torque is output just after the servo system driver is turned on, but the encoder value does not change within a fixed time.	• Defective motor (including defective encoder)	• Replace motor
		• Failure in driver circuit	• Replace driver board
		• Failure in servo power supply	• Replace power board
		• Cable broken • Defective contact between driver board connector J13 and X motor • Defective contact between driver board connector J15 and Y motor • Defective contact between driver board connector J14 and X motor encoder • Defective contact between driver board connector J16 and Y motor encoder	• Remove and reattach connector. If still not working correctly, replace cable

Note: Numbers correspond to the figure in section 7.1.

7.1.3 Pen Errors

	Message	Probable Cause	Action
1	**P TIMEOUT MC** In-position is not turned on even if a fixed time has passed since the up/down operation was completed in the moving coil position control status.	• Defective encoder	• Replace encoder
		• Defective moving coil	• Replace moving coil
		• Failure in driver circuit	• Replace driver board
		• Failure in UPP and peripheral circuits	• Replace main board
		• Failure in servo power supply	• Replace driver board
		• Cable broken	• Remove and reattach connector. If still not working correctly, replace cable
		• Obstacle	• Remove obstacle
		• Defective adhesion of scale in head encoder	• Re-adhere or replace scale
2	**OVER CURRENT MC** During position control, current exceeds the limit value.	• Moving coil short circuit	• Replace moving coil
		• Failure in driver circuit	• Replace driver board
3	**OVER FORCE MC** If the current value exceeds a fixed value with the moving coil pressure controlled, the plotting pressure is considered to be illegal.	• Defective moving coil	• Replace moving coil
		• Failure in driver circuit	• Replace driver board
		• Failure in UPP and peripheral circuits	• Replace main board
		• Defective contact between terminal board connector J400 and driver board connector J12	• Remove and reattach connector. If still not working correctly, replace cable
		• Defective contact between terminal board connector J411 and pen head board connector P3	
		• Defective contact between pen head board connector J411 and moving coil	

7.1.3 Pen Errors (continued)

	Message	Probable Cause	Action
4	**A/D FAIL MC** When the pen/pencil driver is turned on or when the moving coil calibration operates, the moving coil A/D does not change.	• Defective moving coil • Failure in driver circuit • Failure in UPP and peripheral circuits	• Replace moving coil • Replace driver board • Replace main board
5	**C TIMEOUT MC** If the current value does not reach at a certain level after an up/down moving operation is completed with the moving coil position controlled, the current is considered to be Ilegal.	• Defective moving coil • Failure in driver circuit • Failure in UPP and peripheral circuits	• Replace moving coil • Replace driver board • Replace main board

Note: Numbers correspond to the figure in section 7.1.

7.1.4 Other Errors

	Message	Probable Cause	Action
1	**POWER FAIL** Check for a power failure after an interrupt takes place at level 7.	• Power failure	• Replace power supply
		• Input power failure	• Replace power supply
		• Defective contact between power board connector J03 and driver board connector J10	• Remove and reattach connector. If still not working correctly, replace cable
2	**DRIVER OVER HEAT** Supervision of driver temperature increase bit (by timer).	• Defective X-/Y-motor	• Replace motor
		• Defective moving coil	• Replace moving coil
		• Failure in driver circuit	• Replace driver board
		• Failure in UPP and peripheral circuits	• Replace main board
		• Defective contact between driver board connector J11 and main board connector J20	• Remove and reattach connector. If still not working correctly, replace cable
3	**PAPER BROKEN** • Paper binds • X-/Y-motor is in operation • Both sides of X paper sensor are open	• Paper is torn	• Refeed the paper. If still not working correctly, perform mechanical adjustment
		• Paper out of paper path	
		• Defective paper sensor	• Replace sensor
		• Line broken	• Replace main board
		• Defective absorption fan (terminal board connector J403/404)	• Remove and reattach connector. If still not working correctly, replace cable

7.1.4 Other Errors (continued)

	Message	Probable Cause	Action
4	**ORIGIN NOT FOUND** Movement for origin point detection is completed without finding the origin sensor.	• Defective Y origin sensor	• Replace Y origin sensor
		• Defective up origin base (origin board)	• Replace up origin base
		• Line broken • Defective contact between terminal board connector J401 and main board connector J22 • Defective contact between pen head board connector J411 and encoder	• Remove and reattach connector. If still not working correctly, replace cable.
5	**TYPE ERROR**	• Mismatch between plotter type and ROM	• Set up of DIP switches on terminal board • Replace ROM
6	**VERSION MISMATCH**	• Mismatch between board review (main, driver and terminal) and ROM version	• Replace ROM • Replace board

Note: Numbers correspond to the figure in section 7.1.

7.2 Problem Isolation

7.2.1 Problems Occurring During Initialisation

Problem Description	Possible Cause	Remedy
PLOTTER DOES NOT OPERATE • Power LED (green) not lit	Power cable is not appropriately connected	Connect the power cable correctly
• Power LED lit but plotter not placed in STANDBY MODE, and CLOSE THE COVER displayed on LCD	Cover opened	Close the cover
	Cover sensor broken	Replace the cover sensor
• All LEDs turn on and off, "SYSTEM FAILURE" displayed on LCD	If message displayed, what is message?	Refer to section 7.1 "Nonrecoverable Errors"
	Surge protection circuit may be activated	Power down, wait 10 minutes and power up again
	Surge protection may be activated. If plotter does not operate, perform power down and up again. If still not working correctly, power board defective.	Power down, remove extraneous material. Power up again. If still not working correctly, replace power board.

7.2.1 Problems Occurring During Initialisation (continued)

Problem Description	Possible Cause	Remedy
HOME POSITION NOT DETECTED • "SYSTEM FAILURE" displayed on LCD	If message displayed, what is message?	Refer to section 7.1 "Nonrecoverable Errors"
	If up/down pen holder moves smoothly, defective home position sensor at pen head	Replace home position sensor and check sensor using Diagnostic
	If up/down pen holder moves smoothly, defective Terminal board	Replace terminal board
AFTER HEAD DETECTS HOME POSITION, • "SYSTEM FAILURE" displayed on LCD	Burning odor from machine during operation	Refer to section 7.1 "Nonrecoverable Errors"
PAPER FEED NOT INITIALIZED • Error message displayed on LCD	Faulty contact on the connector	Remove connector and reattach
	Pressure arm lever not properly down	Move pressure arm lever up and down again
• "PAPER DETECT ERROR" displayed on LCD and pressure arm lever down	Defective sensor on the pressure arm lever	Replace sensor on the pressure arm lever
	Paper does not feed properly at both paper sensor positions	Remove paper and load again at both paper sensor positions
	Dirty paper sensor	Clean paper sensor. If still not working correctly, replace paper sensor
	Machine affected by excessively bright light	Move machine to proper place
	Cable broken	Replace cable

7.2.1 Problems Occurring During Initialisation (continued)

Problem Description	Possible Cause	Remedy
PAPER SLIPS OFF WHEN PAPER IS INITIALIZED • Error message displayed on LCD	Faulty contact on the connector	Remove connector and reattach
	Faulty paper sensor height adjustment	Readjust height
	Deteriorated paper sensor	Replace the sensor
	Defective terminal board	Replace the sensor
	Cable broken	Replace cable
	Defective absorption fan (J403/J404)	Replace the absorption fan
	Dirty paper sensor	Clean paper sensor. If still not working correctly, replace paper sensor.
	Machine affected by excessively bright light	Move machine to proper place

7.2.1 Problems Occurring During Initialisation (continued)

Problem Description	Possible Cause	Remedy
AFTER PAPER INITIALIZATION, PLOTTING SIZE DIFFERENT FROM SPECIFIED PAPER SIZE (e.g., plots may not be completely drawn) • Plotting size different from specified paper size	Faulty connector contact	Remove and reattach connector
	Dirty paper sensor	Clean paper sensor. If still not working correctly, replace paper sensor
	Machine affected by excessively bright light	Move machine to proper place
	X-direction paper length is not within specified range. Defective distance adjustment between paper sensors	Readjust the distance
	X-direction paper length is not within specified range. Defective height adjustment between paper sensors	Readjust the height
	Paper curls at the edges	Don't use curled paper
	Paper has black or dark edges	Don't use paper with dark or black edges
	Paper is not suitable	Use recommended paper
	Deteriorated paper sensor	Replace the sensor
	Defective terminal board	Replace board

7.2.2 Problems Occurring During Plotting/Cutting

Problem Description	Possible Cause	Remedy
PLOTTER DOES NOT PLOT ONLINE DATA PROVIDED	I/F cable is not properly connected	Connect the I/F cable correctly
	Plotter is not set to REMOTE MODE	Set plotter to REMOTE MODE
	Online setup in STANDBY MODE not done in normal status	Do Online setup in STANDBY MODE while in normal status
	I/F cable not successfully tested or used before	Use I/F cable that has been succesfully tested
	Command setup in STANDBY MODE not done in normal status	Do Command setup in STANDBY MODE while in normal status
	RS divider is in use, or divider is not appropriately handled	Replace RS divider if in use
	Pen Map is not correctly specified	Set Pen Map correctly
	Defective I/F board	Replace I/F board
	Defective mother board	Replace mother board

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
DEFECTIVE INSERTION AND EXTRACTION OF STOCKER AND PEN HEAD • Not GET (Problem occurs during GET)	Defective adjustment of stocker and pen height	Adjust position of pen. Perform Pen Change Z (Diagnostics menu -05)
	Claw part of pen head arm or subarm broken	Replace pen head arm or subarm
	Pen incorrectly installed in stocker	Reinstall pen and retry
	Y-home position is not accurate. Adjusted Y-axis distance is short miss get pen and miss return pen occurs	Adjust of Y-home position (Diagnostics menu -05)
	Pen holder and pen head cover are rubbing against each other, pen head cover is damaged, or coil yoke is loose	Replace head cover or coil yoke
	Worn out mechanism (e.g. bearing)	Replace pen head mechanism

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
• Plotter has retrieved pen in head after GET command but attempts to get another pen	Defective connection of stocker pen presence sensor connector J408	Remove and reattach connector. If still not working correctly, replace the cable or sensor
	Defective detection of stocker home position	Detect and readjust stocker home position
• Plotter goes where there is no pen • Plotter does not go where pen is • No detection of stocker home position when stocker initialized	Defective connection of stocker pen presence sensor connector J408	Remove and reattach connector. If still not working correctly, replace the cable or sensor
	Defective detection of stocker home position	Detect and readjust stocker home position
	Machine affected by excessively bright light	Move machine to proper place, or reduce light
• Not RET	Defective adjustment of stocker and pen height	Adjust position of pen. Perform Pen Change Z (Diagnostics menu -05)
	Y-home position is not accurate. The Y-axis distance is too short causing GET and RET to miss the pen	Adjust of Y-home position (Diagnostics menu -05)
• Subarm contacts the arm release mechanism	Subarm or pen head arm broken or bent	Replace subarm or pen head arm

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
PLOTTING MEDIA SLIPS	Plotter can not grip both edges of media; recommended size not used	Use recommended size
	Plotter can not grip both edges of media. Media is not on the roller	Remove media and load correctly. Retry plotting
	Improper media storage and/or environment for the machine	Refer to *User Guide*
• No problem with media but media slippage occurs when pen changed	Pen is not secured in the pen holder; does not fit	Insert a more stable pen and retry
• No problem with media and no problem when changing pen, but media slippage occurs	Defective torque on power transmission gear, etc.	Tighten screws
	Steel belt slips due to defective steel belt tension	Readjust steel belt

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
• Excessive noise while plotting and paper slippage occurs	Defective torque on power transmission gear, etc.	Tighten screws
	Steel belt slips due to defective steel belt tension	Readjust steel belt
	Timing belt slips due to defective timing belt tension	Readjust timing belt
	Timing belt slips due to defective timing belt or timing belt pulley	Replace timing belt or timing belt pulley
DEFECTIVE PLOTTING PAPER QUALITY	Plotting speed is not appropriately selected	Select appropriate plotting speed
• Plotting lines weak or thin	Pen acceleration is not appropriately set up	Setup recommended pen acceleration
	Pen not suitable for paper type or paper size	Use pen suitable for paper type or paper size

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
DEFECTIVE OPERATION OF PEN UP/DOWN	Defective adjustment of head up/down movement	Replace head assembly
• Pen holder does not move up/down smoothly	Pen is not assembled correctly	Disassemble pen and reassemble correctly. For a pencil, tightly connect the pencil body and tip
• Pen jumps	Pen pressure is not set up properly	Set pen pressure correctly
pressure		Check after plotting is changed, and set pen pressure at proper rate
	Defective pen type identification sensor	Replace pen type identification sensor
	Defective pen type identification board	Replace pen type identification board
	Defective adjustment of roller height	Readjust roller height
• Plotting lines weak or thin	Same as "pen jumps" and "pen holder does not move up/down smoothly"	Same as "pen jumps" and "pen holder does not move up/down smoothly"
	Defective roller height adjustment	Re-enter roller height (Diagnostics menu -06)
	•Worn out pencil •Pencil slippage	Clean up pencil and retry. If still not working correctly, replace pencil

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
• Pen tears media when plotting	Same as "pen jumps" and and "pen holder" does not move up/down smoothly	Same as "pen jumps" and and "pen holder does not move up/down smoothly"
	Defective connection or broken line between moving coil and ribbon cable	Replace head assembly
	Defective connection between pen head board and ribbon cable	Remove and reattach connector. If still not working correctly, replace pen head board
	Defective adjustment of head height	Adjust head height
• Lead breaks frequently when plotting with pencil	Same as "pen jumps" and and "pen holder does not move up/down smoothly"	Same as "pen jumps" and and "pen holder does not move up/down smoothly"
	Defective adjustment of head height	Adjust head height
	Defective roller head adjustment	Re-enter roller height (Diagnostics menu -06)

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
• Pen does not move up/down	Defective contact or broken line between moving coil and ribbon cable	Replace head assembly
	Defective connection between pen head board and ribbon cable	Remove and reattach connector. If still not working correctly, replace pen head board
	Defective terminal board	Replace terminal board
	Defective adhesion of pen head encoder glass scale	Readhere glass scale
	Defective head encoder	Replace head assembly
• "SYSTEM FAILURE" displayed on LCD	If message is displayed, what is message?	Refer to section 7.1 "Nonrecoverable Errors"

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
DEFECTIVE LEAD DETECTION	Bad installation environment	Change the installation place according to *User Guide*
• Lead is not detected. Plotted image does not appear.	Defective adjustment of knock plate height	Adjust knock plate height
• Though lead is existent, the status is judged "no-lead."	Damage of defect in lead detection sensor	Replace pen head board or pen head
	Out of pencil life or defective pencil	Adjust pencil
	For others, see in this section (7.2.2) previous pages "DEFECTIVE OPERATION OF PEN UP/DOWN"	For others, see in this section (7.2.2) previous pages "DEFECTIVE OPERATION OF PEN UP/DOWN"
	Defective adhesion of pen head encoder glass scale	Readhere glass scale
	Defective head encoder	Replace head assembly
	Defective roller height adjustment	Re-enter roller height (Diagnostics menu -06)
	Pen not assembled correctly pencil, tightly connect the pencil body and tip	Disassemble pen and reassemble correctly.
	Worn out pencil tip	Clean up pencil and retry. If still not working correctly, replace pencil tip

7.2.2 Problems Occurring During Plotting/Cutting (continued)

Problem Description	Possible Cause	Remedy
DEFECTIVE PLOTTING QUALITY	Looseness of X-motor/ Y-motor timing belt	Readjust timing belt
	Looseness of X-transfer belt	Readjust X-transfer belt
	Looseness of Y-steel belt tension	Readjust Y-steel belt tension
	Looseness of pen head holder	Readjust pen head return axis
	Defective X-motor/Y-motor setup (Brushing tone, etc., checked)	Replace the X-motor or Y-motor
DEFECTIVE AUTOMATIC LEAD FEEDER MECHANISM	Defective knock plate height	Adjust height of knock plate
	Out of pencil life or defective pencil tip	Replace pencil tip
	Defective lead detection sensor	Replace pen head board or pen head

Chapter 8
SPECIALISED DIAGNOSTICS

8.1 Specialised Diagnostics Overview

The Specialised Diagnostics built into the XP-C series cutting plotters are designed for plotter maintenance professionals. To access the Specialized Diagnostics, hold down the **0**, **Decimal (.)**, and **Minus (-)** keys when you turn the power switch ON.

There are two types of Specialized Diagnostics:

- One is run while the X–/Y–motor pen is not activated.
- The other is run while the X–/Y–motor pen is activated.

The Diagnostics Main Menu has seven "pages". The menu page number is displayed to the right of the first line, as follows. Press the **MENU ▲** key or **MENU ▼** key to page through the menu.

- Items on display pages 1 to 2 are run with the X–/Y–motor and pens not activated.
- Items on display pages 3 to 7 are run with them activated.

* DIAGNOSIS -01*
MEMORY PANEL
SENSOR ACTUATOR
XP-CR

* DIAGNOSIS -02*
PEN XY-ENCODER
XY-POLARITY
XP-CR

* DIAGNOSIS -03*
UPDWN STOCKER
PAPER
XP-CR

* DIAGNOSIS -04*
PCL-FEED XY-MOVE
XP-CR

* ADJUST -05*
Y-DRGN P-CHNG-Y
P-CHNG-Z
XP-CR

* ADJUST -06*
Y-CRRCT ROLLER
HEAD
XP-CR

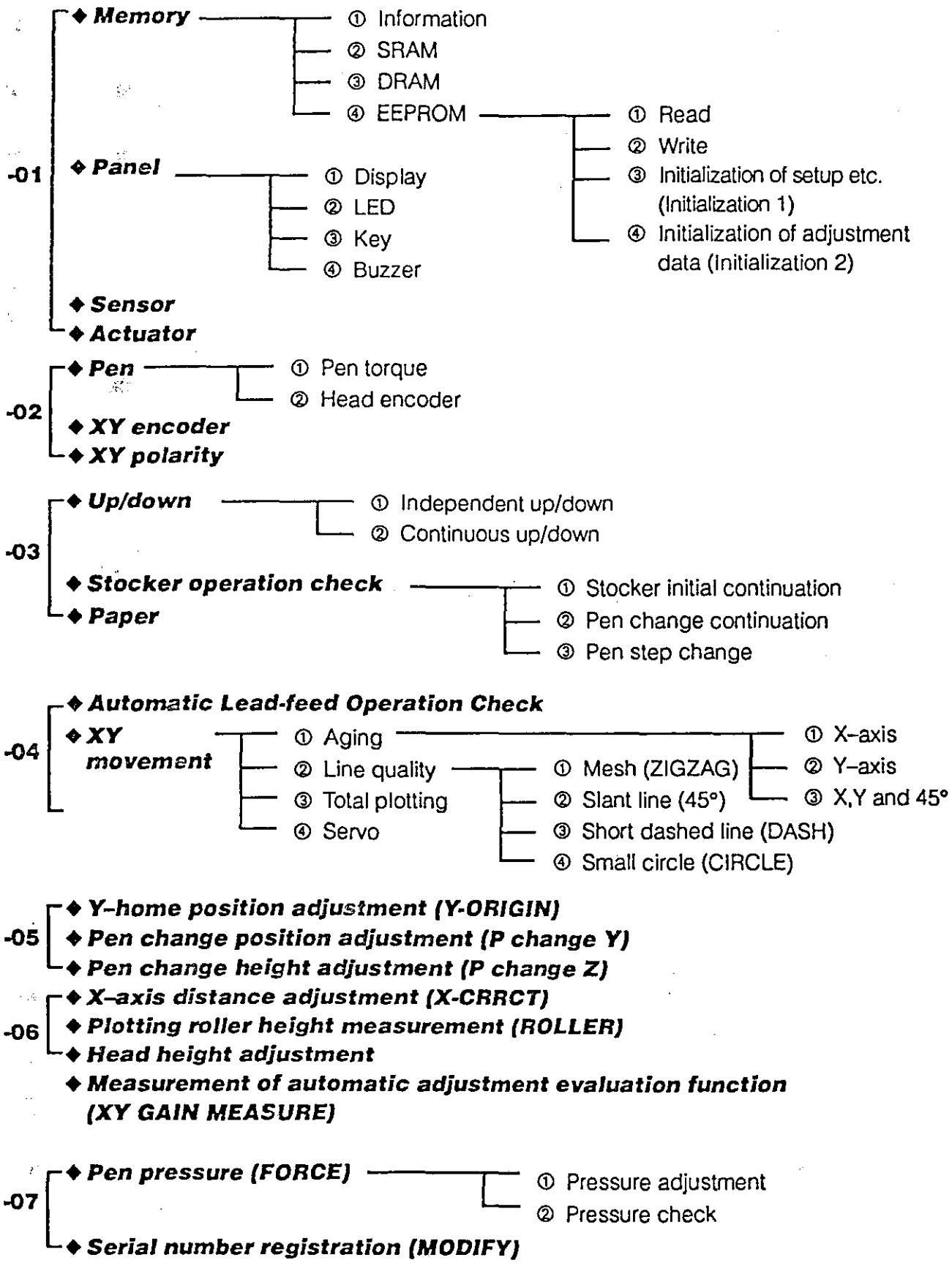
* ADJUST -07*
GAIN PEN FORCE
MODIFY
XP-CR

Note:
Press the **EXIT** key to interrupt a diagnostic operation.

Caution!
Before running this diagnostic, be sure to perform Total Plotting (see section 8.3.9.3). This will provide a hard copy of current settings.

8.1.1 Diagnostic Items and Menu Structure

Specialized Diagnostics are used to check sensor and actuator operations, as follows:



8.2 Diagnostics Menu Language

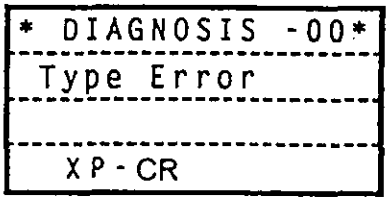
Diagnostic menus and messages are displayed in English. However, in normal operating mode, you can switch between English (metric values) and American (inches).

- From English to American -- hold down the **0** and ENTER keys while you turn the power switch ON.
- From American to English -- hold down the **1** and ENTER keys while you turn the power switch ON.

The following errors at the time of activation of the diagnosis mode will display messages, as in the case when a recoverable error occurs in the normal operating mode.

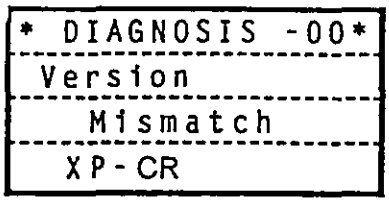
When these errors are displayed, using the plotter in the normal operating mode will cause a non-recoverable error to occur.

8.2.1 Type Error



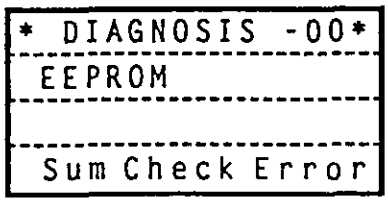
The DIP switches set up on the terminal board do not match the ROM specifications.
Set up the ROM or DIP switches according to the mechanical version.

8.2.2 Version Mismatch



The version of ROM does not match the version of the board (main driver or terminal).
Replace the ROM or board with one of the latest version

8.2.3 EEPROM Sum Check Error



The result of the sum check of EEPROM backup parameter and adjust parameter indicates that the adjust parameter is erroneous.
*Existence of sum check errors in both backup parameter and adjust parameter automatically initializes the parameters, and these errors will not occur.
Normal end of the adjust parameter initialization cancels the errors.

8.2.4 EEPROM Initialisation Error

* DIAGNOSIS -00*
EEPROM
Init. Error
XP-CR

An error occurred during the initialization against an EEPROM sum error while the plotter was activated in the normal operating mode.
Check the main board or replace the EEPROM.

Note:

EEPROM sum check when power is turned on.
When power is turned on, the plotter performs a sum check of backup parameters and adjust parameters. According to the results, the plotter then carries out the following processing.

An error in the backup parameter initialization or the initialization of all EEPROM causes a non-recoverable error in the normal operating mode. An EEPROM initialization error in the diagnosis mode will then occur.

Backup	**Adjust**	**Processing in normal operating mode**	**Processing in diagnosis mode**
Nomal	Nomal	Nomal	Nomal
Error	Nomal	Backup parameter Initialization	Backup parameter Initialization
Nomal	Error	Non- recoverable Error	EEPROM Sum Error
Error	Error	Initialization of all EEPROM	Initialization of all EEPROM

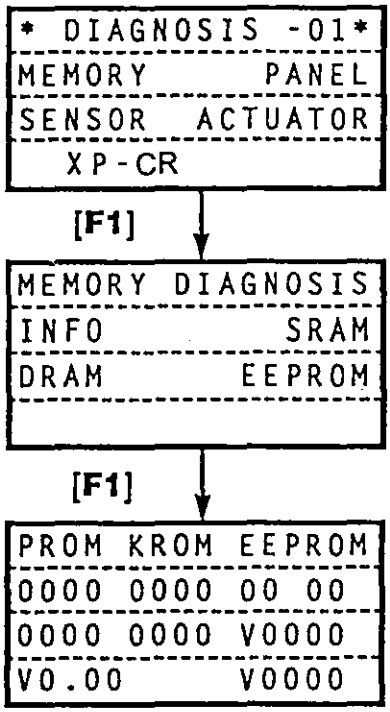
8.3 Specialised Diagnostics Procedures

Caution!
Before running this diagnostic, be sure to perform Total Plotting (see section 8.3.9.3). This will provide a hard copy of current settings.

8.3.1 Memory

The ROM and RAM versions are displayed and checked. The EEPROM is also initialized.

8.3.1.1 Memory Information (Checksum and ROM Version)

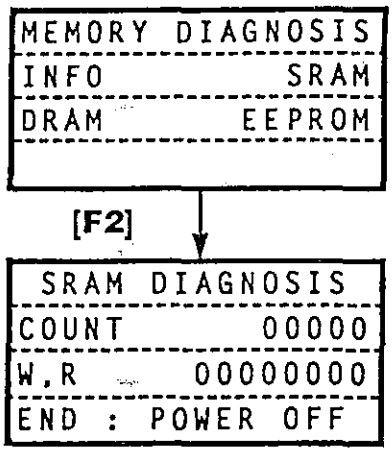


Step 1.
Select MEMORY from the Diagnostic Main Menu.

Step 2.
The PROM version is displayed on the left side of the fourth line. The version of the EEPROM block shown to the user is on the right side of the third line. The version of the EEPROM block not shown to the user is on the fourth line.

For PROM and KROM sum values, an internal registration value appears on the second line, and a calculation value appears on the third line of the LCD. The registration value matches the calculation value when the plotter is operating normally.

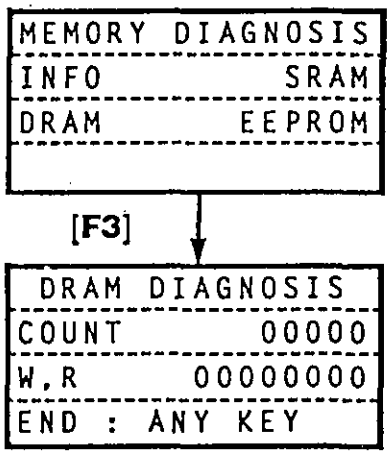
8.3.1.2 SRAM Diagnostics



Step 1.
Select MEMORY from the Diagnostic Main Menu. Press the **F2** key to start the test.

Step 2.
Turn the power switch OFF to stop the test.

8.3.1.3 DRAM Diagnostics



Step 1.
Select MEMORY from Diagnostic -01 on the Main Menu. Press the **F3** key to start the test.

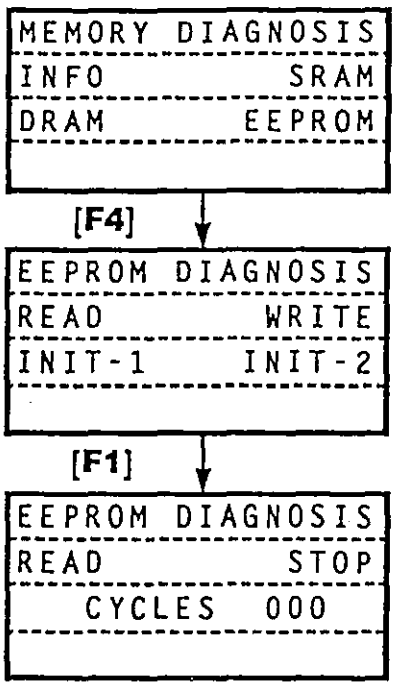
Step 2.
Press any key to stop the test.

8.3.1.4 EEPROM Diagnostics and Parameter Initialisation

Caution!
Before initialization, be sure to perform Total Plotting (see 8.3.12.3).
Execution of [Initialization 1 or Initialization 2] initializes all parameters.

8.3.1.4.1. Read

The plotter reads data from the EEPROM and checks that the data is the same as that read at startup.



Step 1.
Select MEMORY from Diagnostic -01 on the Main Menu. The display at left appears.

Press the **F4** key.

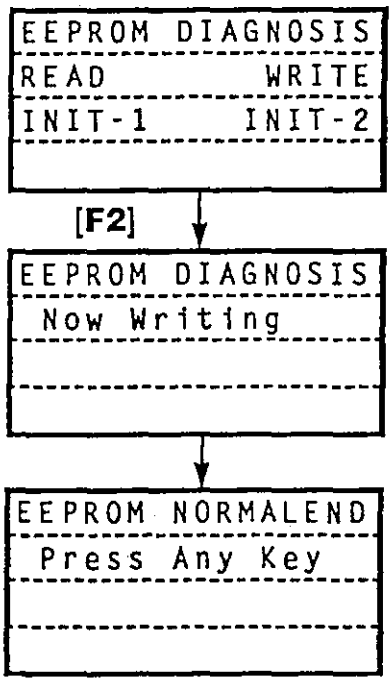
Step 2.
Press the **F1** key to start the test.

Step 3.
Press the **F2** key to stop the test.

8.3.1.4.2 Write

The plotter writes a value into the EEPROM and does a comparison check.

Caution!
The service life of EEPROM depends on the number of write times. Be sure to perform the diagnosis only when necessary. (Each write diagnosis writes EEPROM 768 times.)

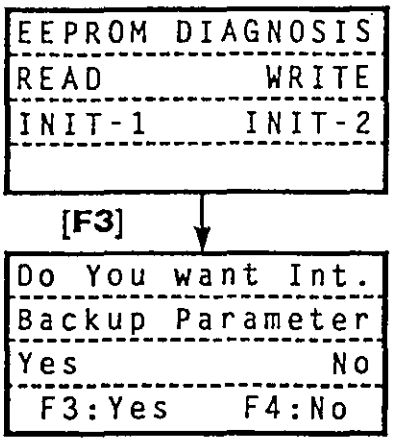


Step 1.
Press the **F2** key to start the compare check.

Step 2.
Press any key to return the plotter to pre-check status.

8.3.1.4.3 Initialize Backup Parameters (Initialisation 1)

The plotter initializes backup parameters.



Step 1.
Press the **F3** key to select INIT-1.

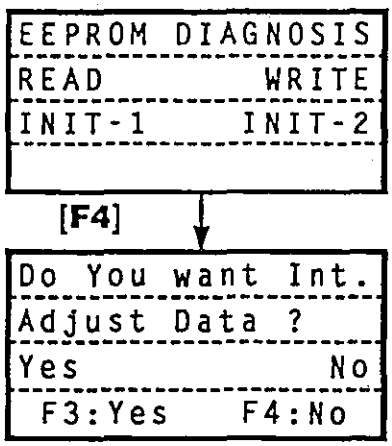
Step 2.
Press the **F3** key again to start initialization.

8.3.1.4.4 Initialise Adjustable Data (Initialisation 2)

The plotter initializes adjustable data, such as the Y–axis home position.

Caution!

- If you run this, all adjusted values must be readjusted.
- Before initialization, be sure to perform Total Plotting (see 8.3.12.3). Execution of [Initialization 1 or Initialization 2] initializes all parameters.



Step 1.
Press the **F4** key to select INIT-2.

Step 2.
Press the **F3** key to start the initialization.

Note:

Items respecified for execution during EEPROM Initialization 2:

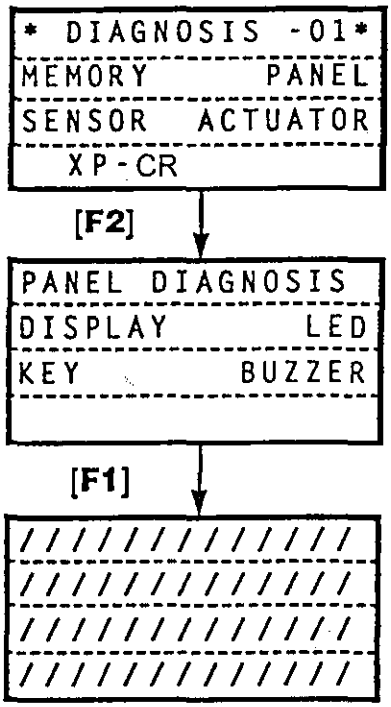
- Y–home position adjustment (Y-ORIGIN)
- Pen-change position adjustment (P change Y)
- Pen-change height adjustment (P change Z)
- X–axis distance adjustment (X-CRRCT)
- Plotting roller height adjustment (ROLLER)
- Plotting pressure adjustment (FORCE)
- Head height adjustment (HEAD)

8.3.2 Control Panel

The plotter tests the display, LED, keys and buzzer on the Control Panel.

8.3.2.1 Display

The plotter tests the LCD.

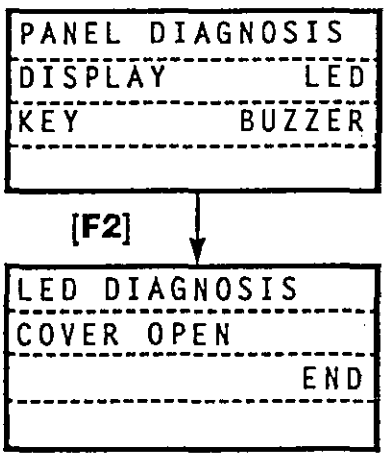


Step 1.
Select the menu shown at left.

Step 2.
The screen at left appears only when the **F1** key is pressed.

8.3.2.2 LED

The plotter tests the LED on the Control Panel.



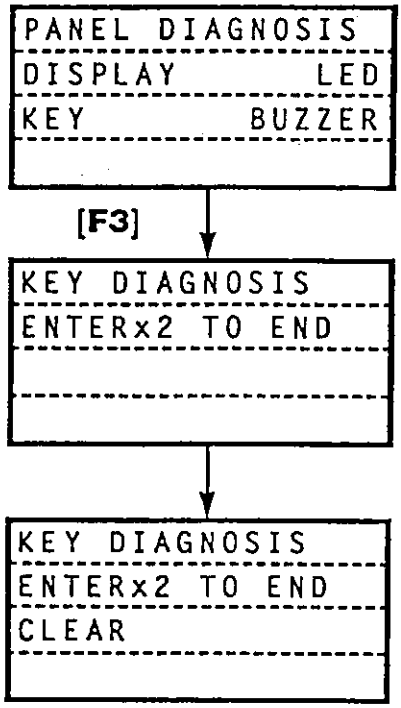
Step 1.
Press the **F1** and **F3** keys to select the LED Diagnostic on the Control Panel.

Step 2.
Press the **F4** key to stop the LED Diagnostic.

Note:
LEDs indicating cover open, etc., do not come on during this test.

8.3.2.3 Key

The plotter tests keys on the Control Panel.



Step 1.
Select the menu at left.

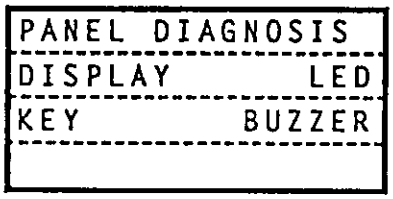
Step 2.
When the screen at left appears, press a key to be tested.

For example, press the **CE** key to display the following screen.

Step 3.
Press the **ENTER** key twice to stop the key test.

8.3.2.4 Buzzer

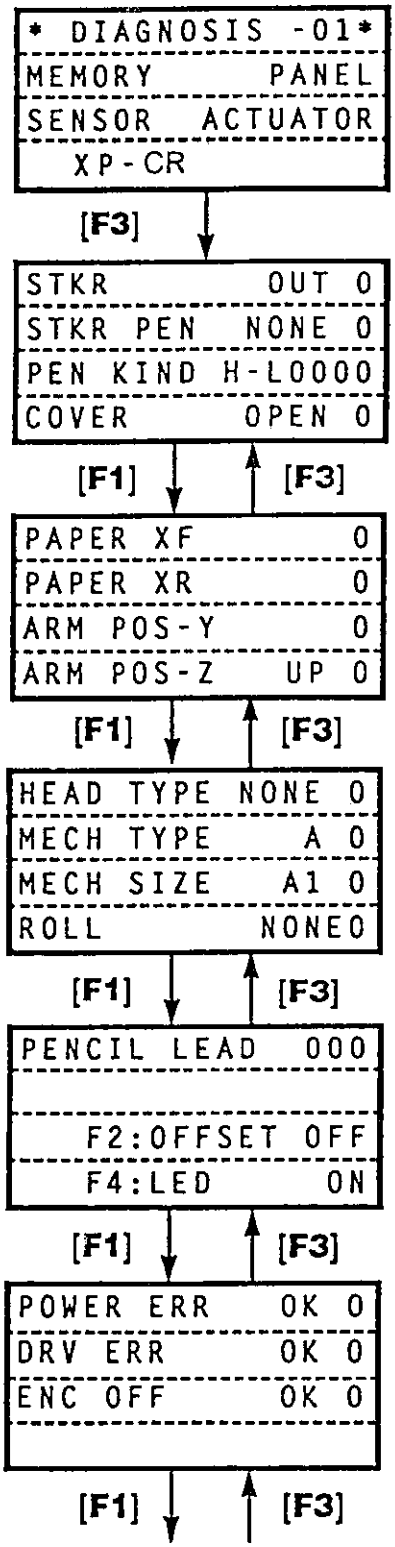
The plotter tests the buzzer.



Step 1.
The buzzer sounds while the **F4** key is being pressed.

8.3.3 Sensor

The plotter checks the on/off operation of sensors



Step 1.
Select the menu at left. Press the **F3** key to select SENSOR.

The indication of the cover status changes according to the review of the terminal board.

◆When the terminal PCB is 2nd E;
Open 0
Close 1

◆When the terminal PCB is 3rd D;
Open 0
Open 1*
Close 2*
Open 3

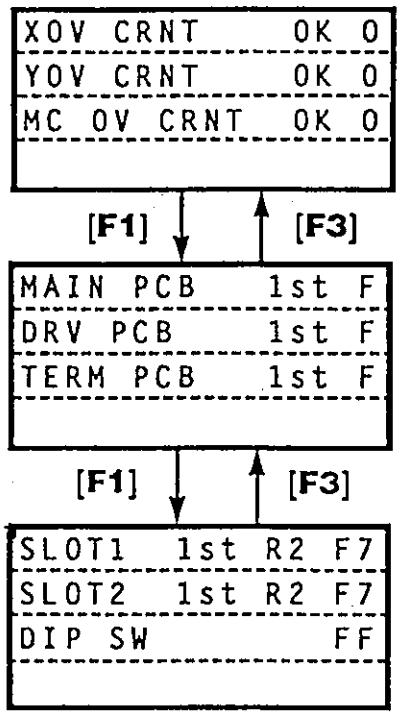
* In normal operation, either of the two is displayed.

Note:
The mechanism status and plotter size can be set up by the DIP switches on the terminal board. To set up the DIP switches, see section 9.2.5.

◆F2: Switches offset (on, off)
◆F4: Switches LEDs (on, off, SGN)
To set up DIP switches, see section 9.2.5.

Continued on the following page

Continued from the previous page

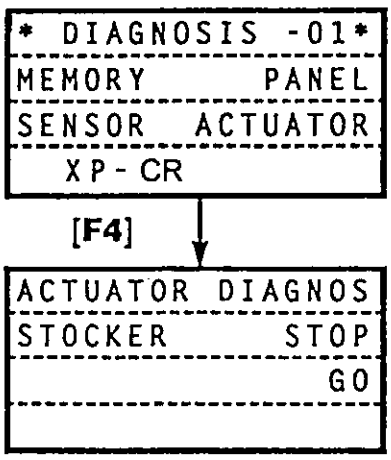


Note:

R2 RS–232C
R4 RS–422A
IE GP–IB
CN CENTRONICS

8.3.4 Actuator

The plotter operates the pulse motor for the stocker and paper vacuum fan.



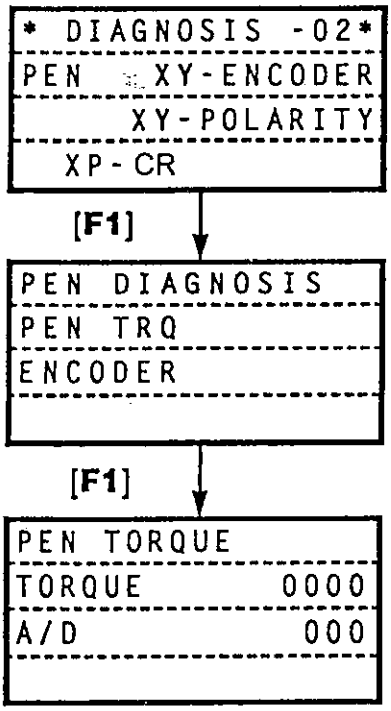
Step 1.
Select the menu at left.

Step 2.
Press the **F1** and **F3** keys to select actuators such as fan.

8.3.5 Pen

The plotter tests the moving coil and encoder on the pen head.

Note:
An A/D read value is displayed when a certain amount of torque is given to the coil on the pen head.



Step 1.
Select the menu at left.

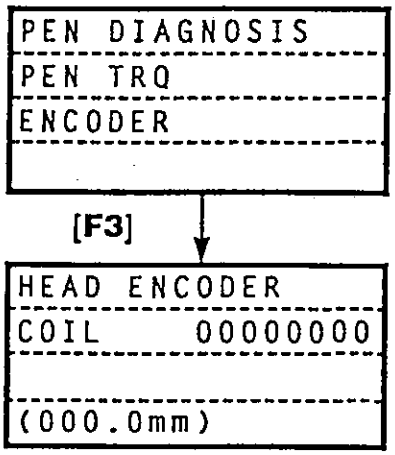
Step 2.
Press the **F1** key to select PEN TRQ.

Step 3.
Press the **F2** key to increase the force moving the coil upward. Press the **F4** key to increase the force moving the coil downward.

Note:
If A/D is displayed, an ideal display value is 200h when the torque is 0 and the range is 000h to 3FFh. (The values scatter more or less depending on the machine type.)

8.3.5.1 Head Encoder

The plotter tests the pen up/down encoder on the head.

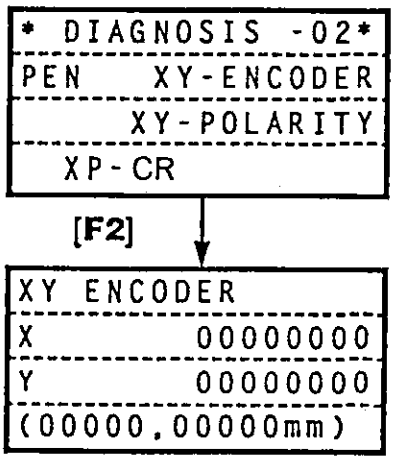


Step 1.
Press the **F3** key to select ENCODER.

Step 2.
The displayed value changes when the head is moved up and down.

8.3.6 XY Encoder

The plotter checks the operation of the encoder in the X-/Y-motor and tests polarity.



Step 1.
Select the menu at left.

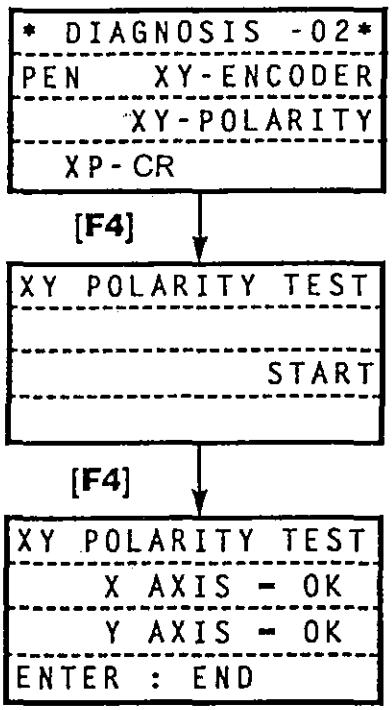
Step 2.
Press the **F2** key to select XY ENCODER.

The displayed value changes when the head or drive roller is moved.

8.3.7 *XY Polarity*

The plotter tests whether the polarities of the X-/Y-motor and encoder are set appropriately.

Caution!
Before running this test, perform the XY encoder diagnostic test to check that polarity of the encoder is correct.

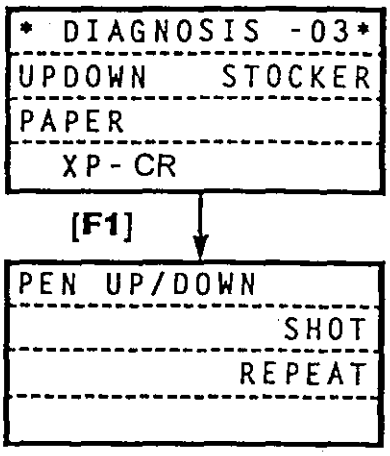


Step 1.
Select the menu at left.

Step 2.
Press the **F4** key to start the test.

8.3.8 Pen Up/Down

The plotter moves the pen head up and down.



Step 1.
Select the menu at left.

Step 2.
Install a pen in the stocker and then load the paper. After initializing the paper, the plotter automatically moves to get the pen.

Press the **F2** key to perform the up/down operation once. Press the **F4** key to perform the operation continuously.

NOTE :

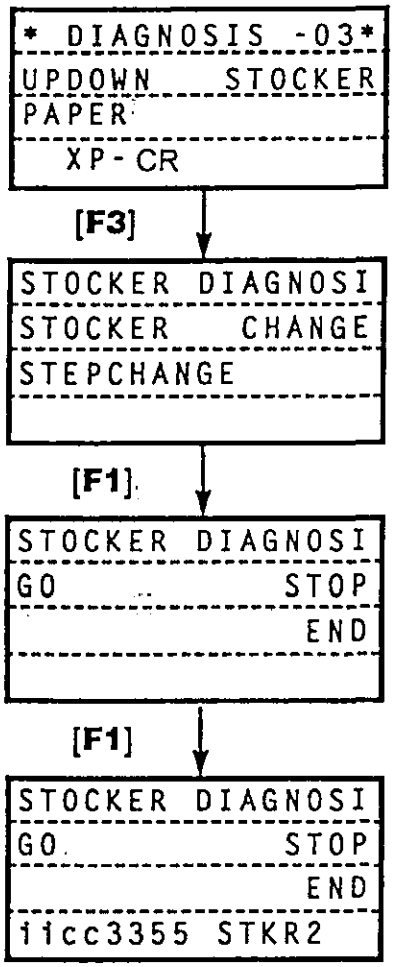
If NO paper has been loaded, the plotter does not begin the test .

8.3.9 Stocker Operation Check

The plotter continuously carries out stocker initialise and pen change to test operations.

8.3.9.1 Stocker Initial

The plotter carries out stocker initial and displays stocker types and pen types.



Step 1.
Select the menu at left.

Step 2.
Press the **F1** key to select STOCKER.

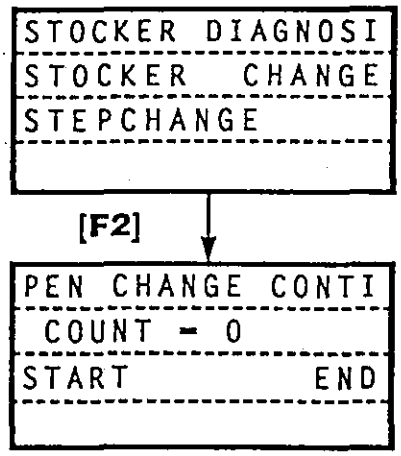
Step 3.
Load pens in the stocker, and press the **F1** key.

Step 4.
After the stocker initializes, the screen at the left appears. The pen type installed in the stocker and the stocker type are displayed at the bottom (automatic identification on/off).

- If the last digit is set to 2, automatic identification is turned on.
- If the last digit is set to 3, automatic identification is turned off.

8.3.9.2 Continuous Pen Change

The plotter continuously performs a pen change between the pen head and the stocker.

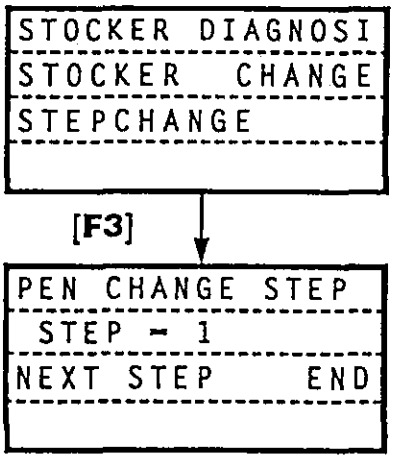


Step 1.
Press the **F2** key to select CHANGE.

Step 2.
Load a pen in the stocker, and press the **F3** key.

8.3.9.3 Step Change

The plotter carries out pen changes step-by-step, each time the **F3** key is pressed.



Step 1.
Press the **F3** key to select STEP CHANGE.

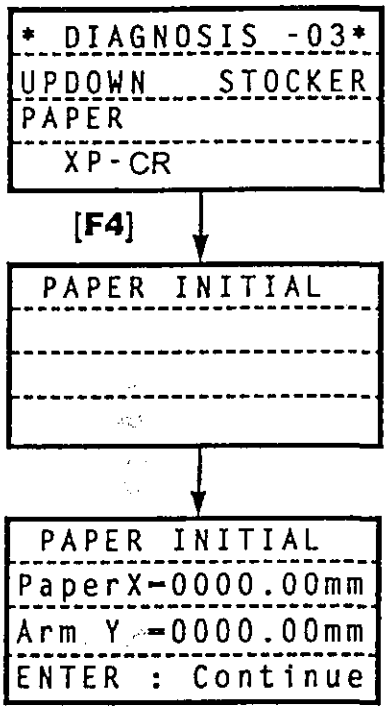
Step 2.
After loading a pen in the stocker, press the **F3** key.

Each time the **F3** key is pressed, a pen change is executed.

8.3.10 Paper Sensor Operation Check

The plotter checks the paper sensor to determine if it is detecting paper correctly.

The plotter checks and adjusts the mounting place of paper X sensors (Front and Rear), and the arm Y-sensor.



Step 1.
Select menu as shown in the drawing at left.

Step 2.
Set paper.

- ◆ Setting paper causes the plotter to start performing initialization.

Step 3.
After the paper initialization, the result is displayed in millimeters.

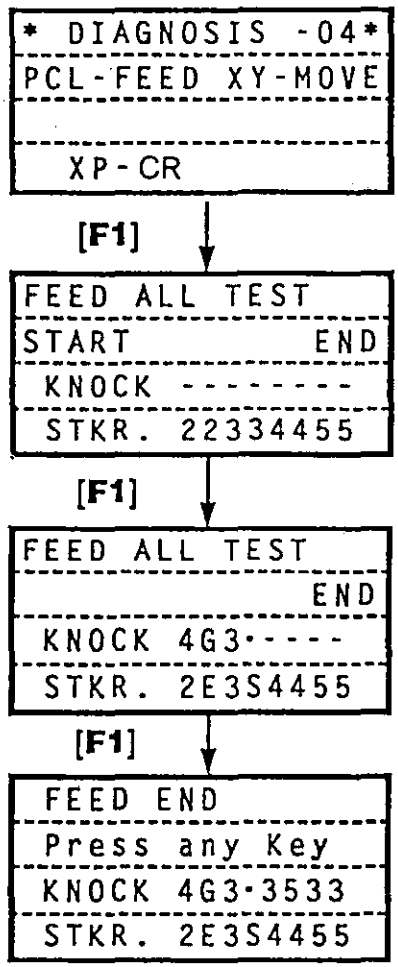
- ◆ Value X indicates the length of paper in the X-axis.
- ◆ Value Y indicates the length of paper in the Y-axis calculated when the pressure arm position is detected.

Step 4.
Pressing the **ENTER** key repeats paper initialization.

- ◆ Pressing the **EXIT** key stops the operation.

8.3.11 Automatic Lead-Feed Operation Check

The plotter carries out automatic lead-feed operation check.



Step 1.
Select menu at left and set the paper. Install a pencil in the stocker of any number or install pencils in all stockers.

Step 2.
Press the **F1** key (start) to start plotting.

The plotter performs the lead feed operation once for each pencil.

- ◆ The number of knocks for lead feed and the stocker status are displayed in the 3rd and 4th lines on the LCD, respectively.
- ◆ This operation occurs in any of the following situations: when the plotter has finished feeding lead to all pencils in the stocker or when the plotter has finished plotting on the entire paper or when you have pressed the **F2** key (end).

Step 3.
Press any key to complete the automatic lead-feed operation check.

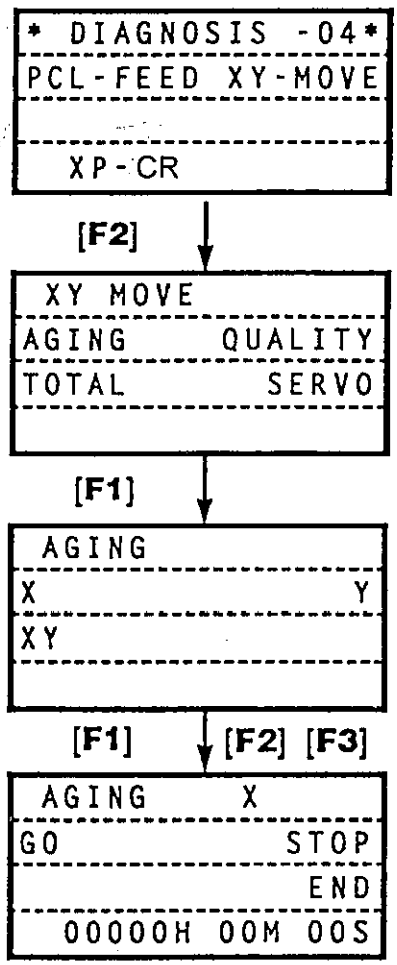
- ◆ Stocker status
  2, 3, 4, 5, 7(mm) lead diameter of pencil
  E: Lead empty S: Lead slip
- ◆ Knock status
  -: Has not fed lead
  •: Cannot feed lead (lead sides)
  0 to 9, A to G: Number of Knocks at time of lead feed (0 to 16)

8.3.12 XY Movement

The plotter carries out aging, line quality check, total plotting and servo-parameter check.

8.3.12.1 Aging

The plotter continuously moves the X-/Y-motor and displays execution time.



Step 1.
Select the menu at left.

Step 2.
Press the **F1** key to select AGING.

Step 3.
Select an aging axis.

- If paper has already been loaded, the plotter moves within the specified paper range.
- If no paper is loaded, the plotter moves across the maximum range.

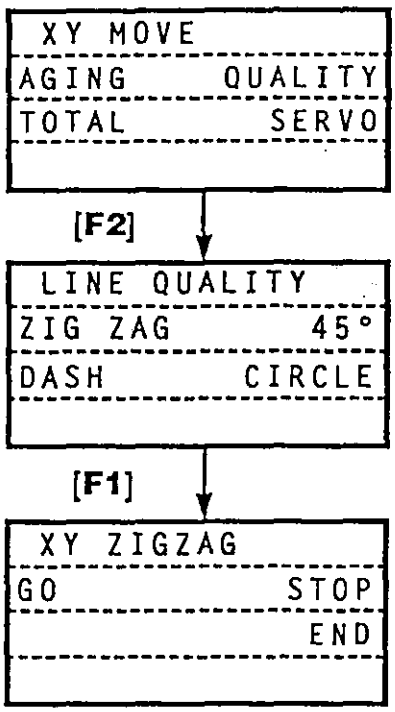
The **F1** key moves the X axis.

The **F2** key moves the Y axis.

The **F3** key moves the X and Y axes.

8.3.12.2 Line Quality

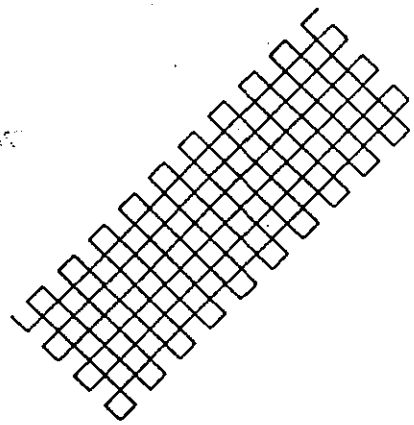
The plotter plots patterns to check the line quality.



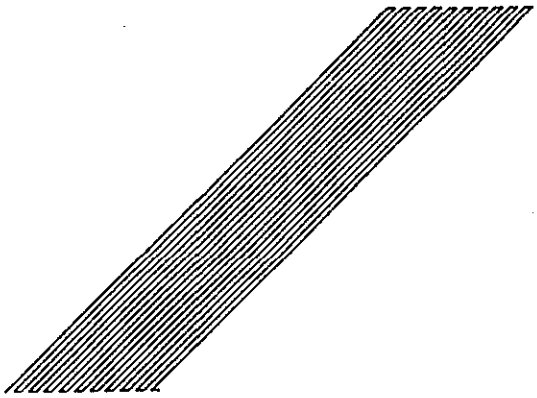
Step 1.
Load paper and pens, and press the **F2** key.

After the paper is initialized, the following screen is displayed.

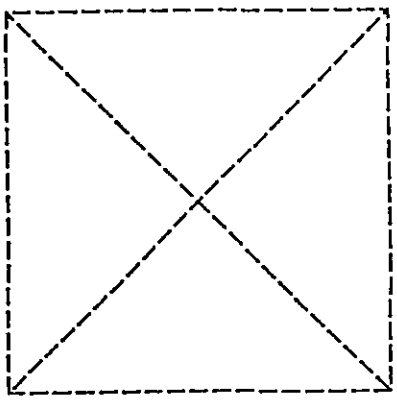
Step 2.
Press any function key to select a plotting pattern. This example shows selection of the zigzag pattern.



Zigzag



45°



Dash

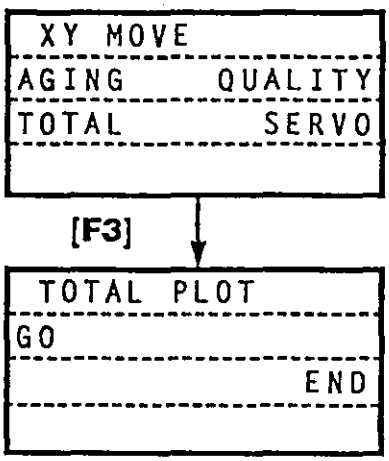
Circles

8.3.12.3 Total Plotting

The plotter plots setup information, adjustment values and other information :

- Machine type and languages
- ROM version, checksum for EEPROM and EEPROM version
- User Number
- Type of interface in slots 1 and 2
- Setup information for Users 1 to 4 (online, command, environment, and option)
- Pen parameter
- Pen map and stocker types
- Adjust values (Y–home position, pen change Y, pen change height, X–axis adjustment, pen pressure adjustment, and pen head height)
- Distribution of Y–axis plotting roller height
- Main board and DIP switches
- Board review
- Line-quality check patterns

Note:
Use A3-size paper or larger.
Refer to the "Total Plotting Diagnostics" in section 6.2 specialized Test Plots.

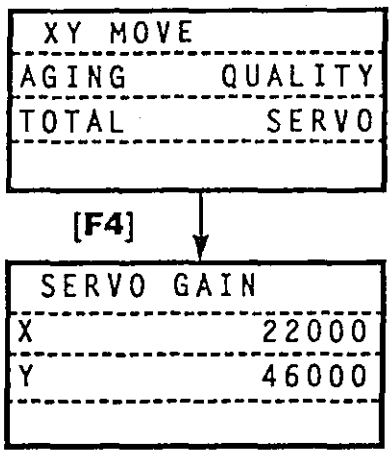


Step 1.
Press the **F3** key to select TOTAL.

Step 2.
Load a pen and paper, and press the **F1** key to plot.

8.3.12.4 Servo Parameter Check

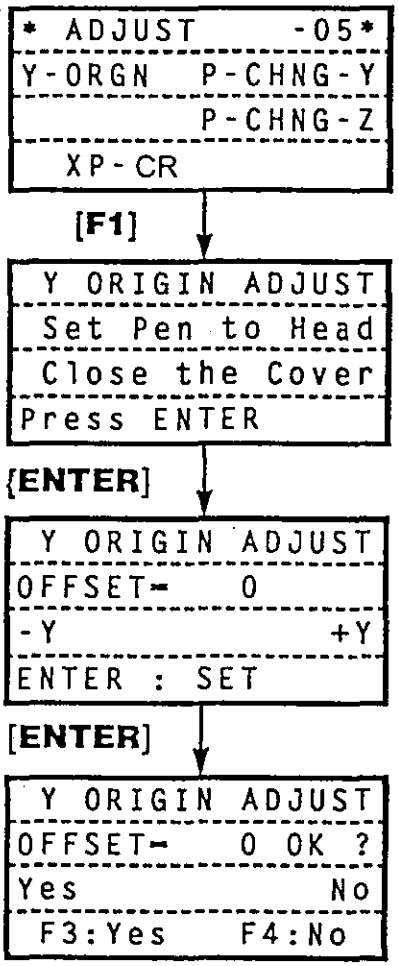
The plotter checks servo parameters



Step 1.
Press the **F4** key to select SERVO.

8.3.13 Y Origin Adjustment

The plotter adjusts the cursor origin sensor and pen center.

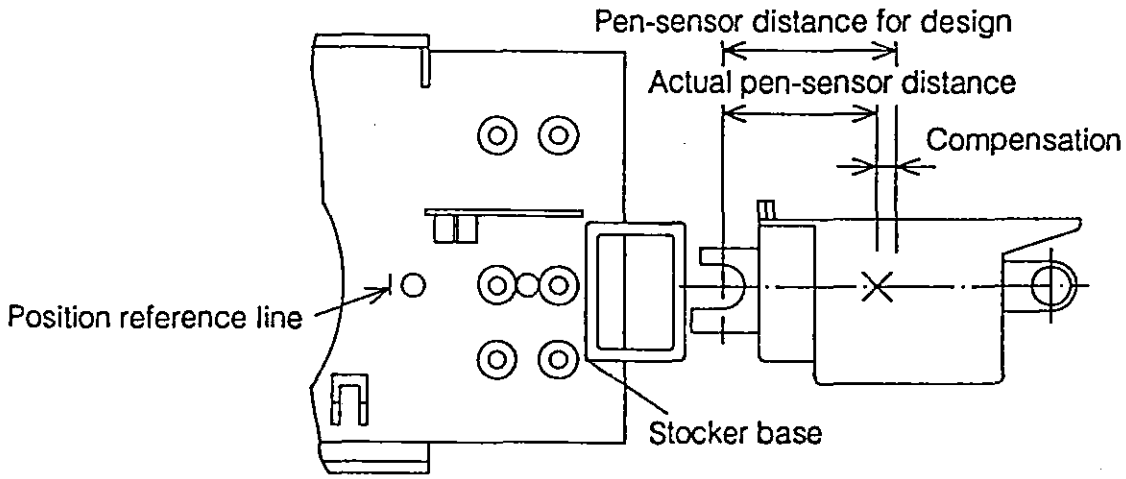


Step 1.
Select the menu at left.

Step 2.
Attach a pen to the pen head.

Step 3.
Press the **F3** (-Y) and **F4** (+Y) keys to align the pen tip center to the position reference line on the origin base. Then press the **ENTER** key.

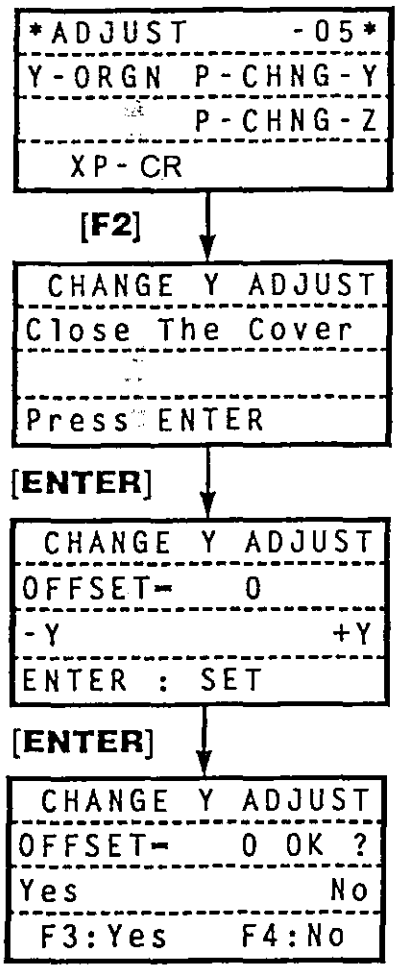
Step 4.
Press the **F3** key to update the adjustment value.



8.3.14 Pen Change Position Adjustment

The plotter adjusts the pen change position (Y-axis direction).

Note:
Before doing this adjustment, be sure to adjust the Y origin.



Step 1.
Select the menu at left.

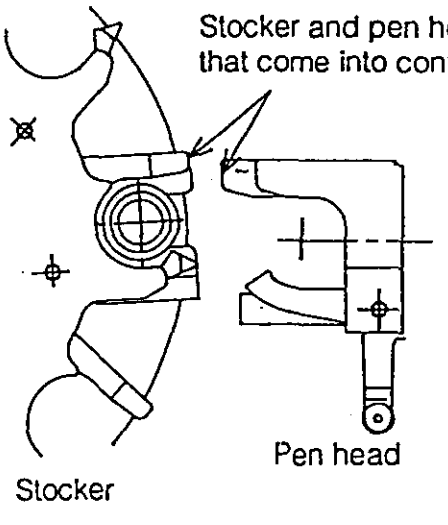
Step 2.
Press the **ENTER** key. The stocker rotates and the pen head moves to an adjustment position.

Step 3.
Press the **F3** (-Y) and **F4** (+Y) keys until the head contacts the stocker.

When they touch each other, press the **ENTER** key.

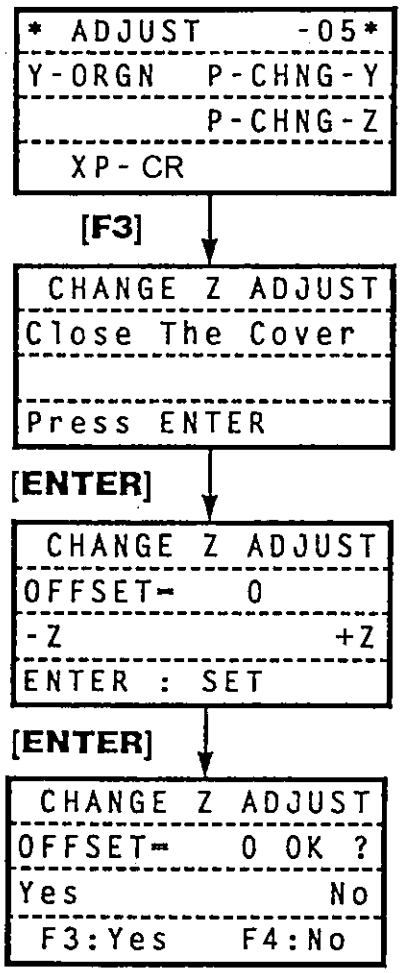
Step 4.
Press the **F3** key to update the adjustment value.

Note:
Before this adjustment, be sure to adjust the Y origin (see section 8.3.13).



8.3.15 Pen Change Height Adjustment

The plotter adjusts the pen head and stocker height when a pen change is performed.

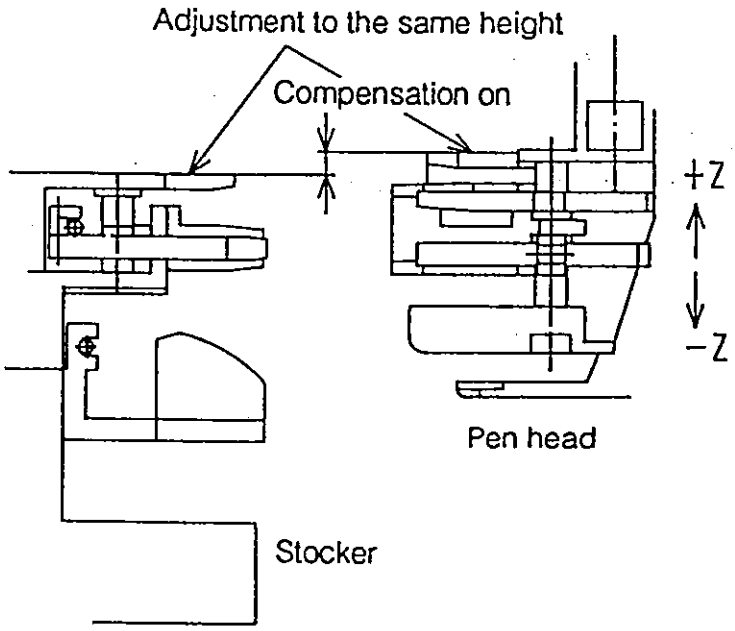


Step 1.
Select the menu at left.

Step 2.
Press the **ENTER** key. The stocker rotates and the pen head moves to an adjustment position.

Step 3.
Press the **F3** (-Z) and **F4** (+Z) keys to align the upper side of the pen catch and the upper side of the stocker. When they are aligned, press the **ENTER** key.

Step 4.
Press the **F3** key to update the adjustment value.



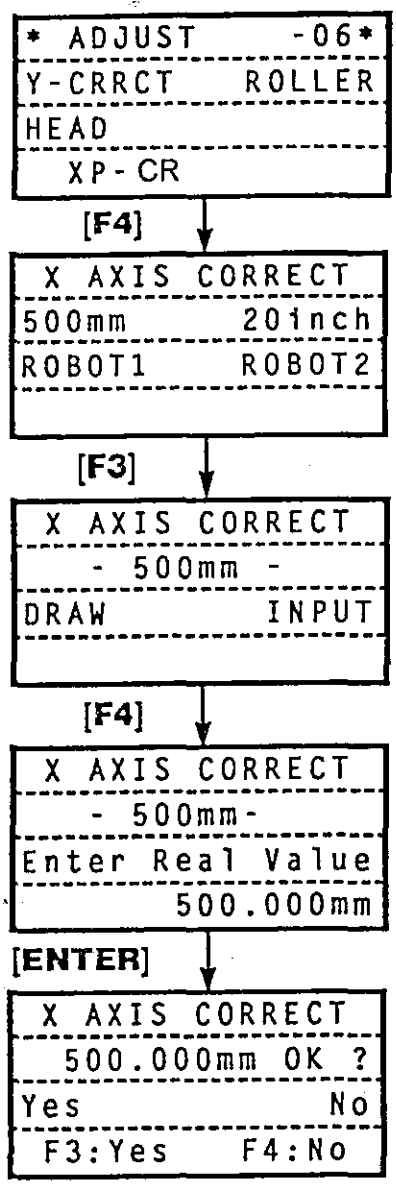
8.3.16 X-Axis Distance Adjustment

This adjustment is necessary to eliminate errors of movement caused by errors in the X-axis drive roller diameter.

Caution !

The Mutoh XP-C Series plotters are adjusted before shipping from the factory. Do not perform this adjustment except when precision obviously worsens.

An accurate reference scale (measurement in units of 0.01 mm allowed) is necessary to perform this adjustment.



Step 1.
Select the menu at left.

Step 2.
Use A1-size paper or larger.

Select a pattern for the X–axis distance adjustment.

- The **F1** key plots a square of 500 mm x 500 mm.
- The **F2** key plots a square of 20 inches x 20 inches.
- The **F3** and **F4** keys are used for robot measurements in production processes.

Step 3.
Draw a 500 mm x 500 mm square.

- The **F3** key plots a selected pattern. After plotting the pattern, the plotter returns to this screen.
- The **F4** key then displays the input screen.

Step 4.
After drawing the square, measure the length of the X–axis in the square and enter the value.

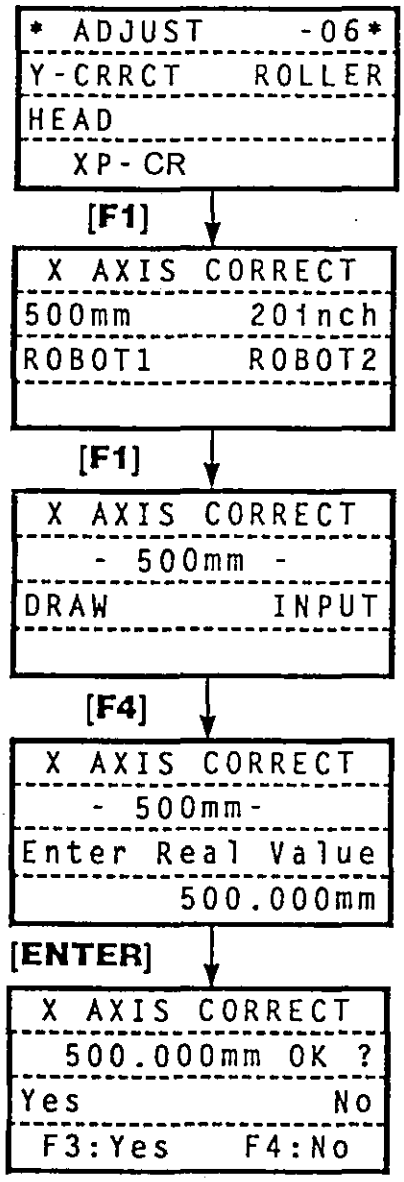
Step 5.
Press the **F3** key to determine the length.

Note:

Use data output from the host computer to check the adjusted length after the distance adjustment is completed.

Data replotted in the diagnostic mode is used to plot the default value. Therefore this data is not available as adjusted data.

Readjustment of X-axis distance due to destruction of EEPROM etc., requires the following steps to be performed.



Step 1.
Select the menu at left.

Step 2.
Set A3-size paper or larger.
Press the **F4** key to select "ROBOT 2".

Step 3.
Press the **F4** key to select "INPUT".

Step 4.
Enter a real value.

Step 5.
Press the **F3** key to correct the X-axis.

Note:

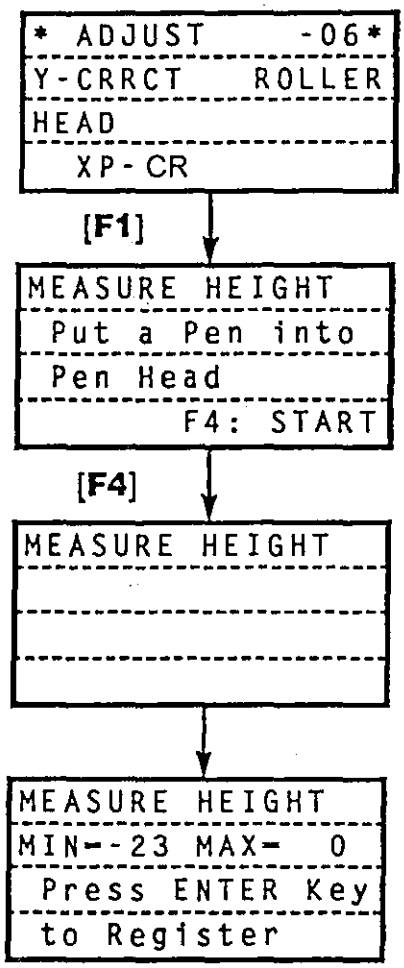
The X-axis distance of this plotter is shown in the following chart. You will find this when the cover (right) ASSY is removed.

Enter this value. →

No.000
XLENGHT ADJUST = 000.00
YLENGHT ADJUST = 000.00
ANGEL = 90.DEG 0' 0
XLENGHT REAL = 000.00
YLENGHT REAL = 000.00
HUKUGEN 0.00 0.00
PENCHUCK 0.00 0.00

8.3.17 Plotting Roller Height

Variations in plotting roller height are adjusted.



Step 1.
Select the menu at left.

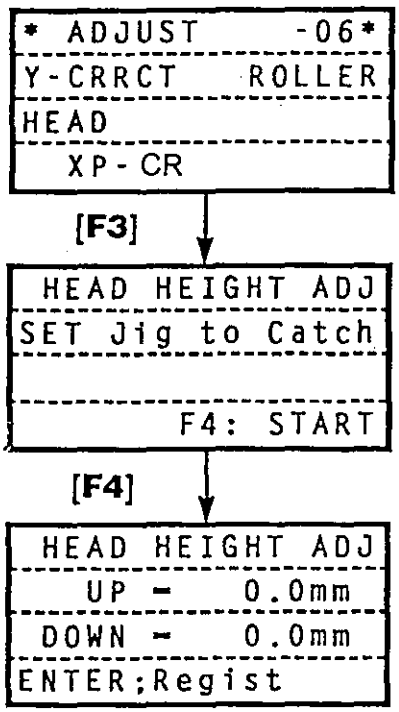
Step 2.
Attach the adjustment pen (JD-41440) to the pen head.

Step 3.
Measure the height at intervals of about 40.96 mm.

Step 4.
Press the **ENTER** key to store data.

8.3.18 Head Height Adjustment

The heights of the up and down collars of the pen head are adjusted to remove waste lead in the pencil lead feed.



Step 1.
Select the menu at left.

Step 2.
Set the jig (JD-30292) for head height adjustment at the pen head.
Press the **F4** key (start).

Step 3.
The plotter measures the height. After a few seconds it displays the measured heights of the up and down collars.
Press the **ENTER** key to register the adjusted values.

8.3.19 Measurement of Automatic Adjustment Evaluation Function

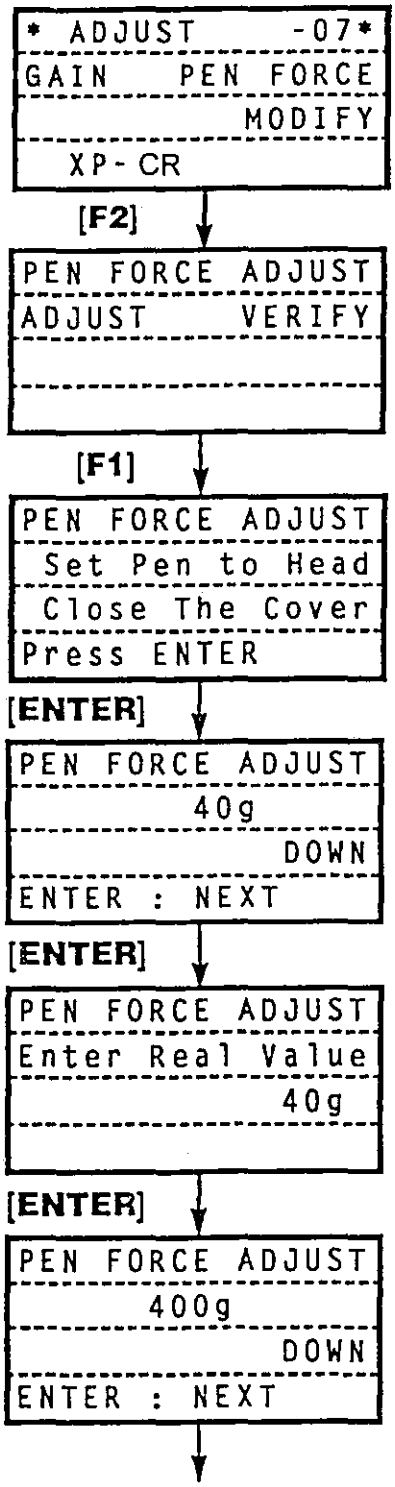
This verification is necessary for measurement from servo-automatic adjustment to evalution function.

This parameter displays values calculated automatically by the software. Therefore only the values are verified.

8.3.20 Pen Force

The plotter adjusts and checks pen force.

8.3.20.1 Pen Force Adjustment



Step 1.
Select the menu at left.

Step 2.
Press the **F1** key to select ADJUST.

Step 3.
Attach the adjustment pen (JD-41440) to the pen head.

Step 4.
Press the **F4** key to switch pen DOWN. Measure the pen force with the Bar tension gauge (50g).

- The 4th line message appears on the LCD only when the 3rd line message is UP.

Step 5.
Press the **F4** key to switch pen UP. Enter the measured value.

- The 4th line appears on the LCD only when the 3rd line message is UP.
- LCD will read FORCE ADJUST 400g.

Step 6.
Measure the pen force with the Bar tension gauge (500g). Press the **F4** key to switch pen UP/DOWN.

Note:

When a measured value is entered:

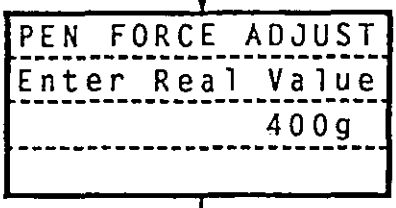
40[g] - - - Within the range of ±20[g]

400[g] - - - Within the range of ±70[g]

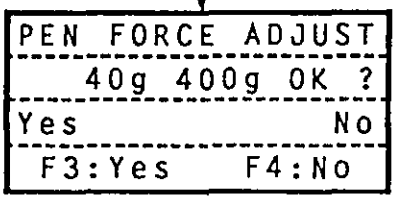
Continued on the following page

Continued from the previous page

[ENTER]



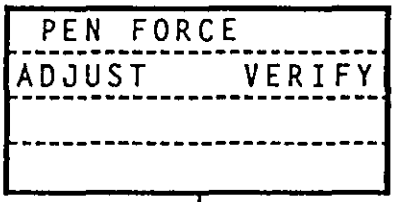
[ENTER]



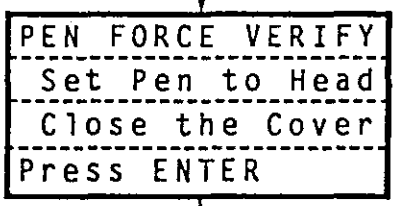
Step 7.
Enter the measured value. Press the **F4** key to switch pen UP/DOWN.

Step 8.
Press the **F3** key to update the adjustment value.

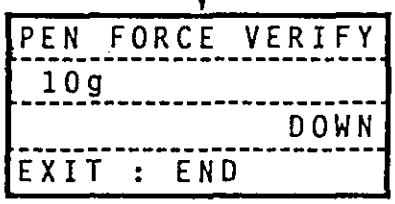
8.3.20.2 Pen Force Verify



[F2]



[ENTER]



Step 1.
Select VERIFY.

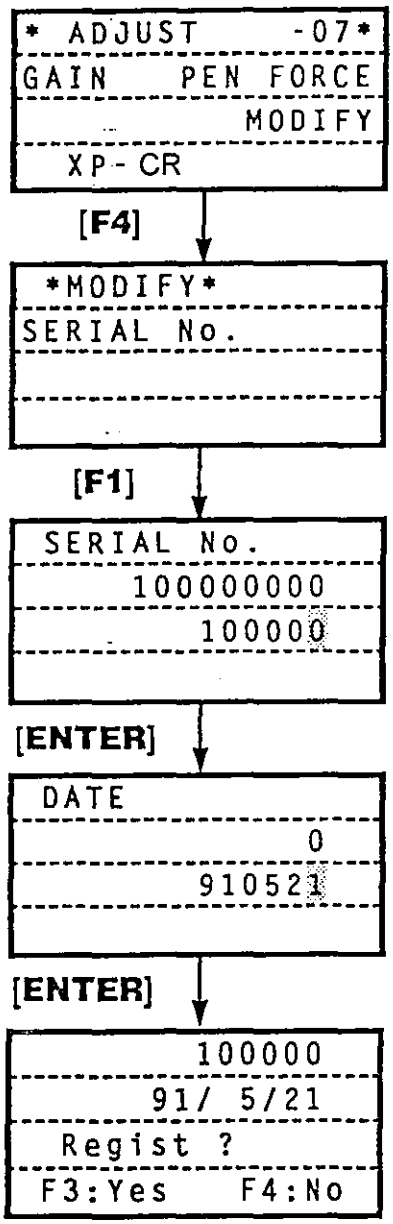
Step 2.
Attach the adjustment pen (JD-41440) to the pen head.

Step 3.
Press the **F1** and **F3** keys to cause the pen force to change as follows: 10, 15, 20, 25, 30, 40, 100, 200, 300, 400, 450.

Press the **F4** key to move the pen up and down.

8.3.21 Serial Number Registration

The registered serial number and date are used when the plotter performs Total Plotting with the X- and Y-axes moved and the plotting in robot measurement pattern for X-axis compensation.



Step 1.
Select the menu at left.

Step 2.
Select MODIFY.

Step 3.
Enter a serial number using the numeric keys.

Step 4.
Enter a date using the numeric keys.

Step 5.
Press the **F3** key to update the serial number.

9.1.2 Disassembling the Y-Rail Cover

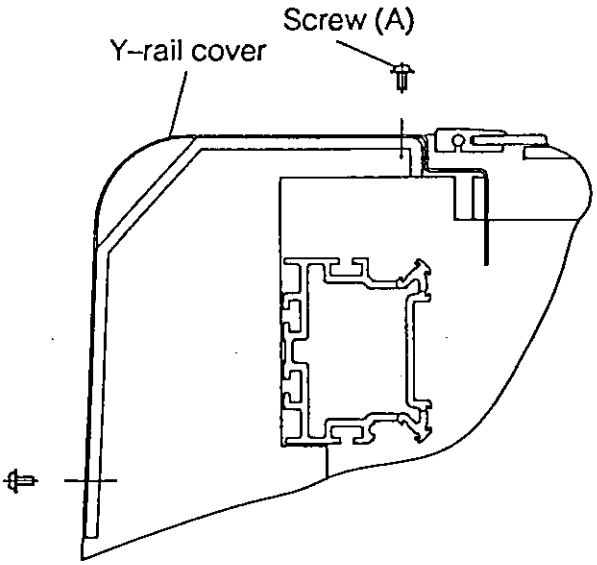
Step 1.
Remove covers (Left and Right).

Step 2.
Remove screw A and then the Y-rail cover.

9.1.2.1 Reassembly

To reassemble, reverse the steps in section 9.1.2.

Note:
In reassembly, install the FG cable with screw A.

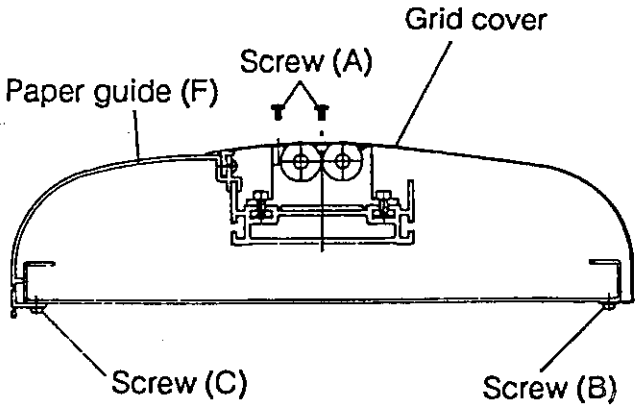


9.1.3 Disassembling the Grid Cover

Caution!
Be careful not to damage the grid roller when removing or replacing grid cover.

Step 1.
Remove screw A, B.

Step 2.
Slide the grid cover obliquely and remove it.



9.1.3.1 Reassembly

To reassemble, reverse the steps in section 9.1.3.

Chapter 9
PARTS REPLACEMENT

9.1 Mechanical Parts

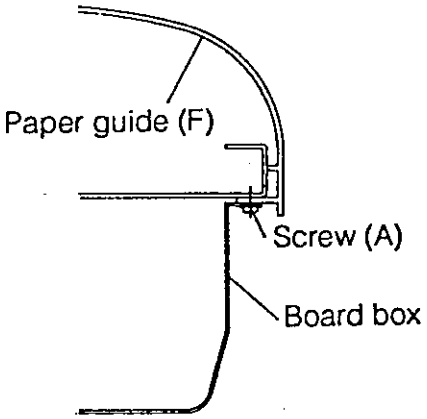
9.1.1 Disassembling Covers L (Left) and R (Right)

Step 1.
Remove screw A and open the board box.

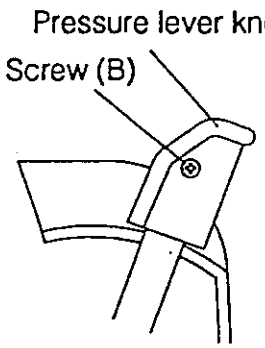
Step 2.
Remove the panel cable connector and ground terminal from the main board and pull the cable from the base.

Step 3.
Remove screw B and remove the hold lever knob.

Step 4.
Remove screws C and remove cover (Left).

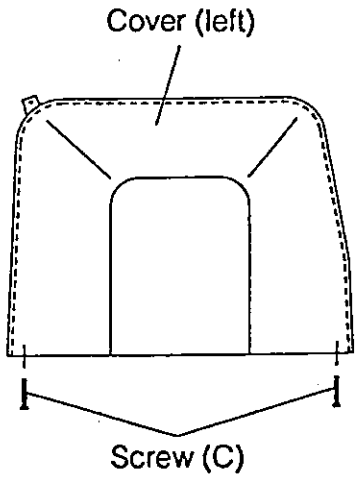


Note:
Cover (Right) can be taken off after screws C are removed from that side.



9.1.1.1 Reassembly

To reassemble, reverse the steps in section 9.1.1.



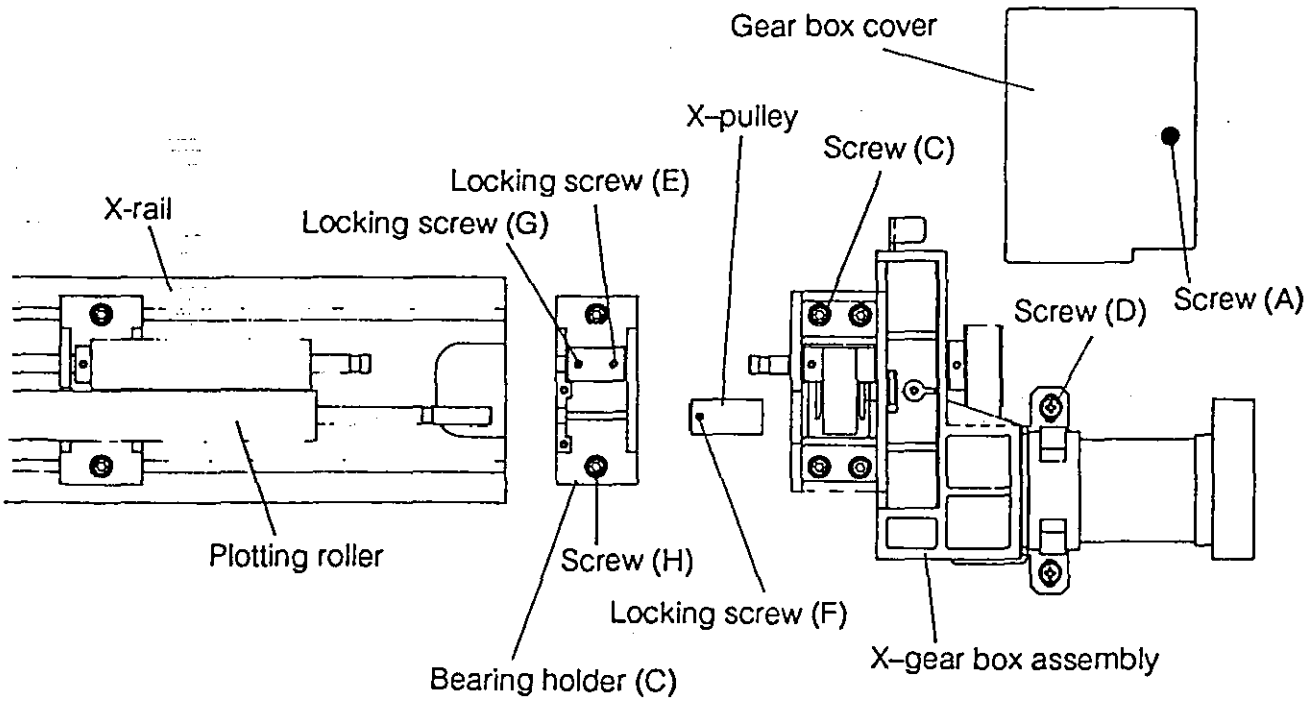
9.1.5.1 Reassembly

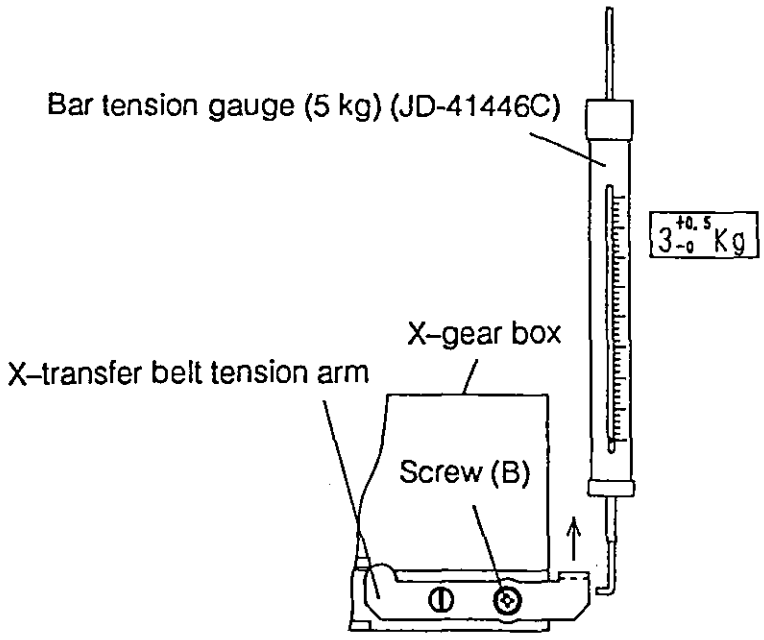
Step 1.
To reassemble the plotting roller, reverse the steps in section 9.1.5.

Step 2.
Adjust the tension of the X-transfer belt.

- Use a tension gauge to get a load of 3 kg. Firmly fasten screw B.
- Grease the replaced X-transfer belt.

Step 3.
After assembly, run the Diagnostic test to adjust plotting roller height.





9.1.4 Disassembling the Paper Guide F (Front)

Step 1.
Remove the grid cover.

Step 2.
Remove paper guide F (Front).

a. Open the board box.

b. Remove screws C and pull up to remove the part in the X–rail.

Remove screws B and pull up to remove the part in the X–rail.

9.1.4.1 Reassembly

To reassemble, reverse the steps in section 9.1.4.

9.1.5 Disassembling the Plotting Roller

Step 1.
Remove cover (Right).

Step 2.
Remove the grid cover.

Step 3.
Remove screw A and then the gear box cover.

Step 4.
Loosen screw B to relax the X–transfer belt tension.

Step 5.
Remove the X–axis motor.

Step 6.
Remove screws C and D and loosen locking screw E. Remove the X–gear box assembly from the X–rail.

Step 7.
Loosen locking screw F and remove the pulley.

Step 8.
Loosen locking screw G and screw H. Remove bearing holder C from the X–rail.

Step 9.
Slide the plotting roller to the right and remove it.

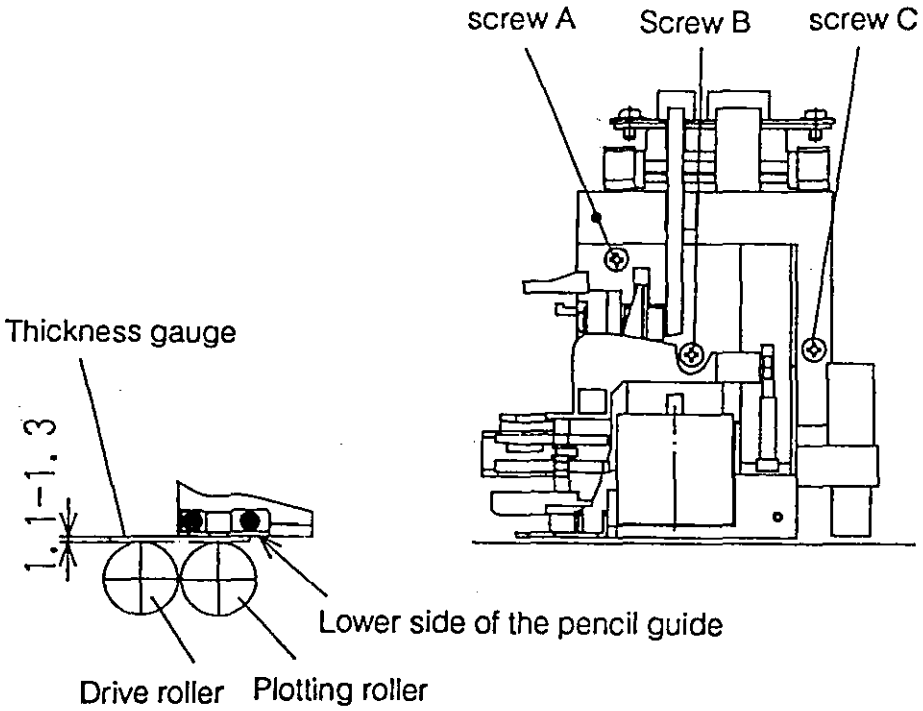
Step 3.
Adjust pen head height.

a. Move the pressure roller to the A3 (B) size position and move the pressure roller down.

b. Move the pen head toward the pressure roller. Adjust the distance between the pressure roller and the lower side of the pen head using a thickness gauge. Thickness should be within a range of 1.1 mm to 1.3 mm.

c. After getting proper clearance, tighten screws A, B and C.

Step 4.
After assembly, run the Diagnostic test to adjust pen change height.



Note:
Be sure to perform the following adjustments:

- Y-home position adjustment (Y-ORIGIN)
- Pen change position adjustment (P change Y)
- Pen change height adjustment (P change Z)
- Plotting roller height measurement (ROLLER)
- Head height adjustment (HEAD)
- Plotting pressure (FORCE)

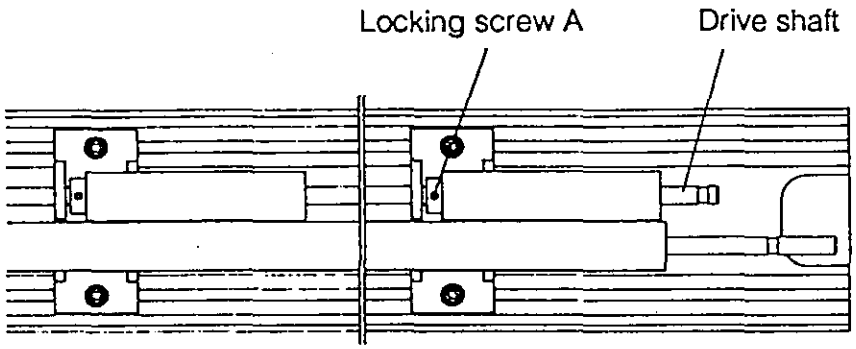
9.1.6 Disassembling the Drive Rollers

Step 1.
Remove the plotting roller.

Step 2.
Remove locking screw A from all drive rollers, then remove the drive shaft by moving it to the right.

9.1.6.1 Reassembly

To reassemble, reverse the steps in section 9.1.6.



9.1.7 Disassembling the Pen Head

Step 1.
Remove cover (Left).

Step 2.
Remove the pen head cover.

Step 3.
Move the pen head toward the stocker and then remove the moving coil and the sensor connector through the opening at the upper portion of the bracket.

Step 4.
Remove screws A, B and C and then remove the pen head.

9.1.7.1 Reassembly

Step 1.
Put the pen-head protrusion into the groove of the cursor and tighten screws A, B and C a couple of turns.

Step 2.
Insert the moving coil and the sensor connector.

9.1.9.1 Reassembly

Step 1.
Join the belt and Screw C.

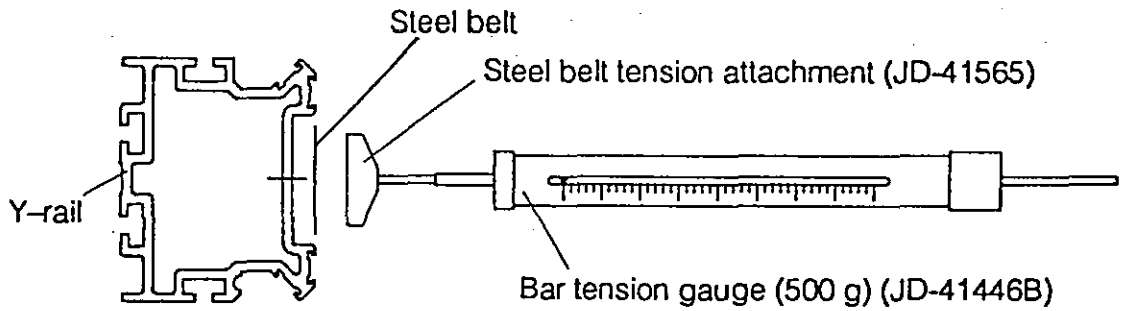
Step 2.
Install the cursor. Relax tension on the belt.

Step 3.
Move the cursor to the right end.

Step 4.
Adjust the belt so that it can be tightly attached to the Y-rail. After screws A and B are tightened, a tension gauge should register 300 g ± 20 for the XP-620C and 260g ± 20 for the XP-940C and 220 ± 20 g for the XP-1250C.

Note:

- If the belt pulls to one side when the cursor is moved from side to side, adjust the return pulley slant with screws A and B and readjust the belt position.
- Return the cursor to the right end, and then retake the measurements.



9.1.10 Pressure Roller Pressure Adjustment

When the grid roller is replaced or when paper misalignment occurs, adjust the pressure roller pressure.

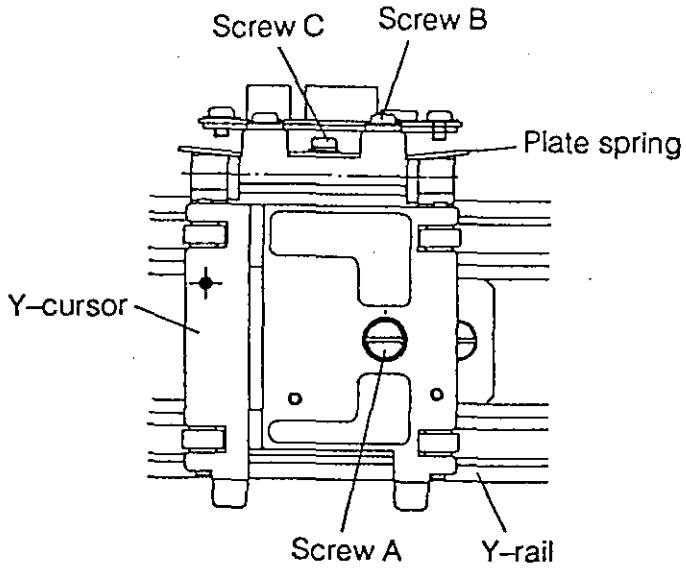
Step 1.
Remove covers (Left and Right).

Step 2.
Remove the Y-rail cover.

Step 3.
Attach a bar tension gauge (5 kg) to the measurement attachment.

9.1.8 Disassembling the Y-Cursor

Step 1.
Remove the head.



Step 2.
Remove screw A.

Step 3.
Remove screws B and C. Remove the board and plate spring.

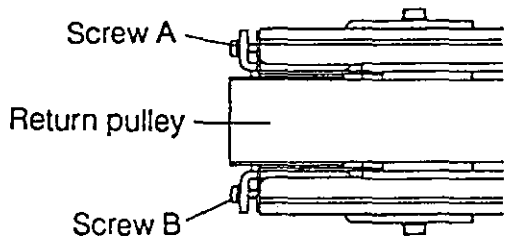
Step 4.
Slide the Y-cursor to the lower side of the Y-rail and remove it.

9.1.8.1 Reassembly

To reassemble, reverse the steps in section 9.1.8.

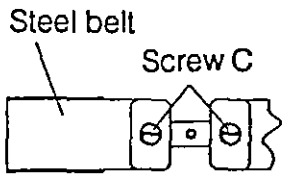
Note :
In reassembly, coat screw A with a screw lock.

9.1.9 Disassembling the Y-Belt



Step 1.
Remove the head (see section 9.1.7.).

Step 2.
Remove the cursor.



Step 3.
Loosen screws A and B and relax belt tension.

Step 4.
Remove screw C and then remove the Y-belt.

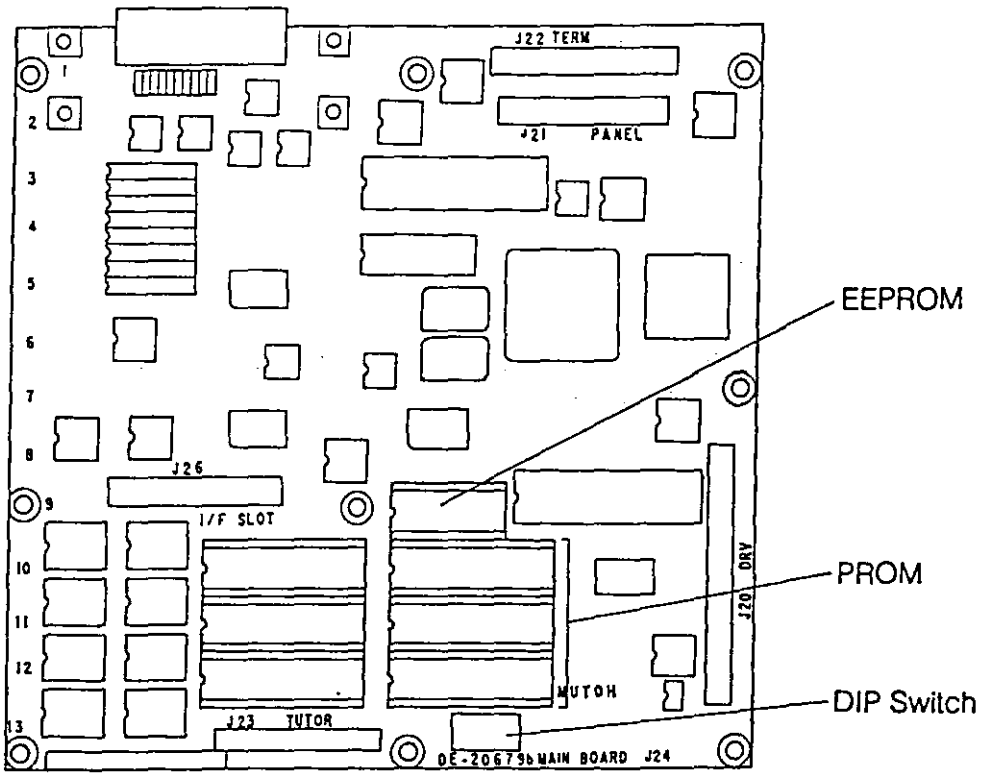
9.2 Electronic Parts

9.2.1 Disassembling the Main Board

Step 1.
Open the board box.

Step 2.
Remove the screws holding the connectors from the rear side of this plotter.
(Remove expansion interface, if installed.)

Step 3.
Remove the connectors and screws from the board, then remove the board.



9.2.1.1 Reassembly

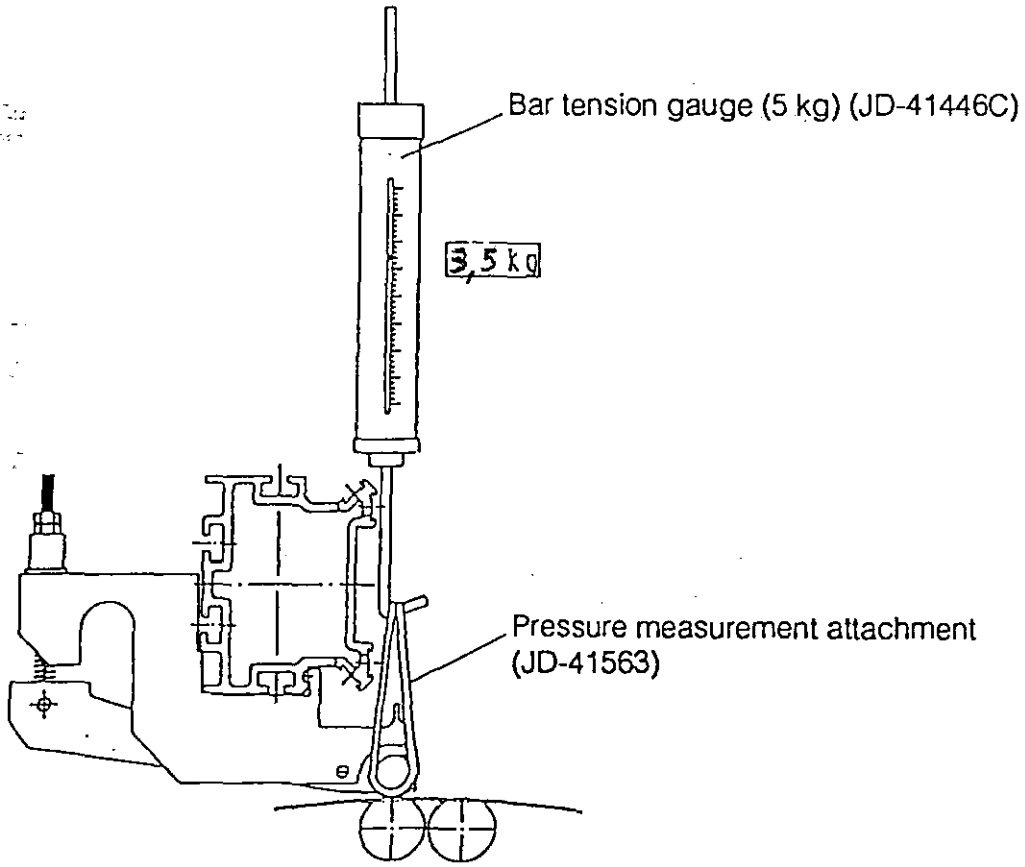
Step 1.
Remove the four screws from the rear side of the removed board. Then remove the option slot side plate, the mother board and the EEPROM, and install the replacement board.

Step 2.
Set the board in the board box, secure it with screws, and attach the connector to the board.

Step 4.
Reset the spring pressure by adjusting the nut tension axis until the pressure value reads 3.5 kg ± 0.2 kg (factory-setting).

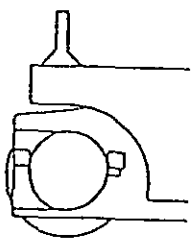
Caution!

Make sure that the adjustment is performed so that the difference between right and left pressure strengths is ± 0.1 kg.



Pressure switching status

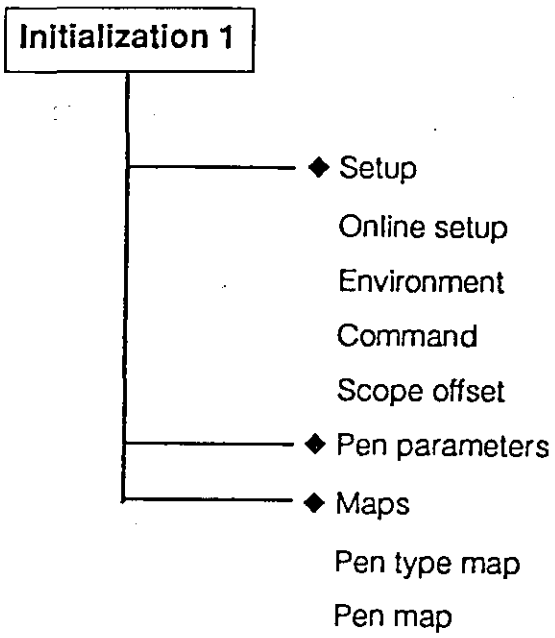
Adjustment of pressure



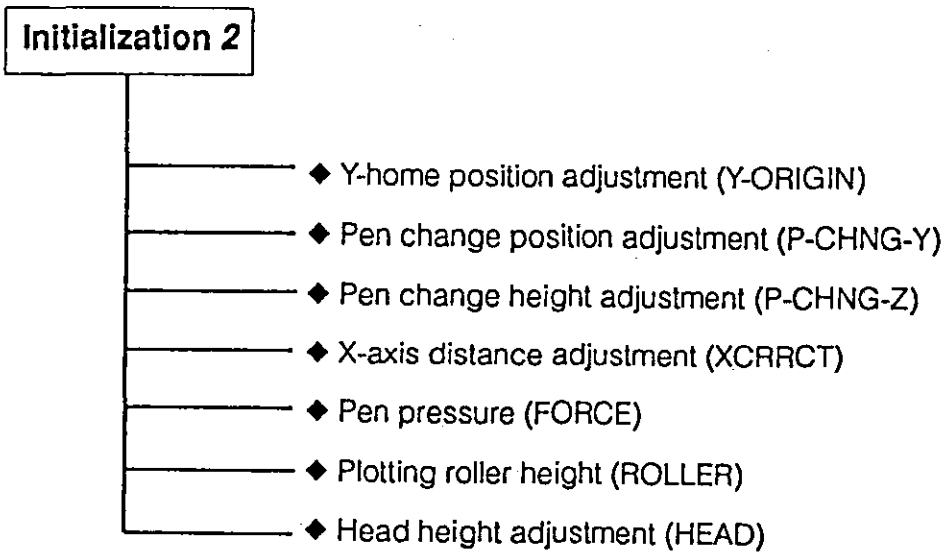
Pressure high (3.5 kg)

The following data are stored in the EEPROM :

Settings in normal operating mode:



Settings in the self-test mode:


Initialization 2
◆ Y-home position adjustment (Y-ORIGIN)
◆ Pen change position adjustment (P-CHNG-Y)
◆ Pen change height adjustment (P-CHNG-Z)
◆ X-axis distance adjustment (XCRRCT)
◆ Pen pressure (FORCE)
◆ Plotting roller height (ROLLER)
◆ Head height adjustment (HEAD)

You can check the above setup values through the self-diagnosis total plotting.

Note:

If the EEPROM fails for any reason, it must be initialized or replaced. Therefore, the above values must be set up again.

Note:

Set the DIP switches on the main board.

In principle, all DIP switches on the main board are set to off becouse the main board is used in the manufacturing process or for special maintenance.

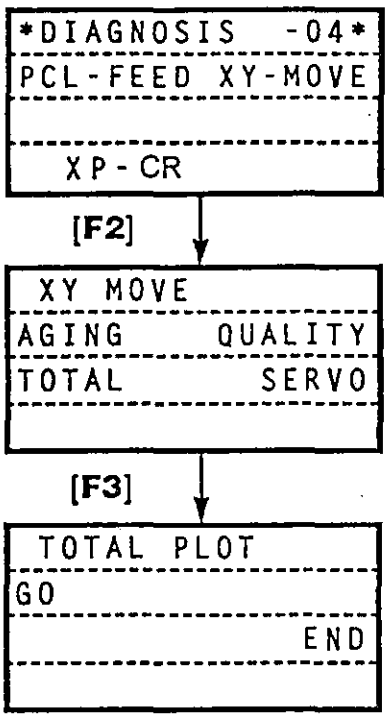
After the plotter is shipped from the factory, only DIP switches 5 and 6 can be switched again. Other switches all must be set to off.

0:OFF 1:ON

DIP1: Not used
2: Not used
3: Not used
4: Not used
5: Not used
6: Not used
7: Aging mode
8: Boad inspection mode

9.2.2 EEPROM Initialisation and Replacement

The plotter can check the setup data stored in the EEPROM through the following total plotting self-diagnosis.



Step 1.
Select the menu at left.
Press the **F2** key to select XY-movement.
Install a pen in the stocker, and set paper size to A3 or larger.

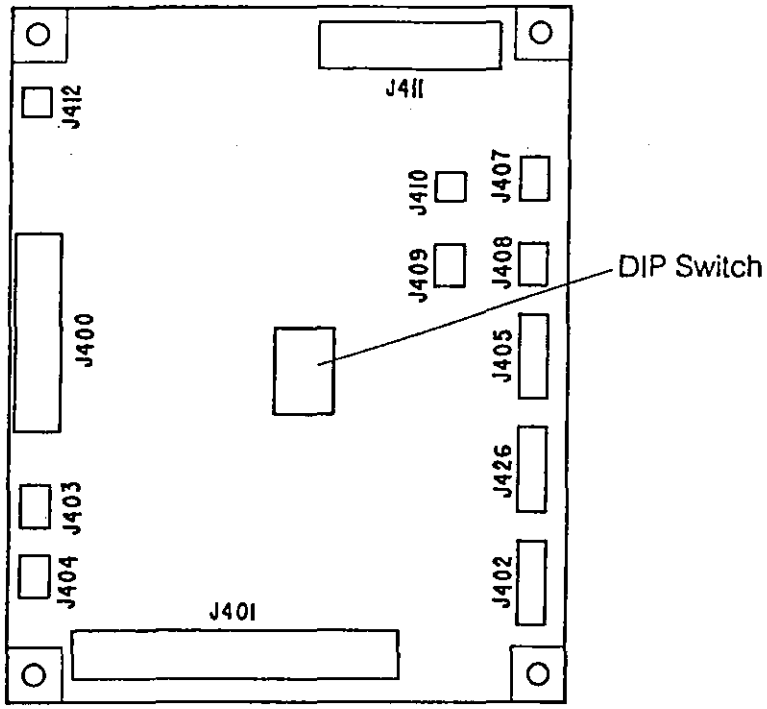
Step 2.
Press the **F3** key to select TOTAL.

Step 3.
Press the **F1** key to start the total plotting self-diagnosis.

9.2.5 Disassembling the Terminal Board

Step 1.

Remove cover (Left).



Step 2.

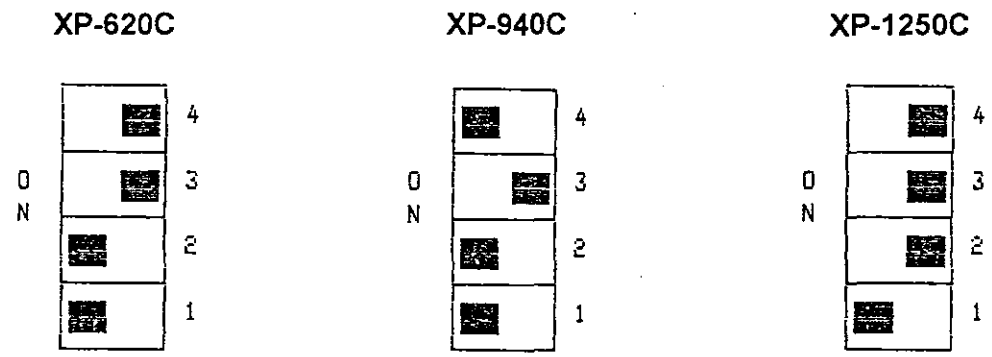
Remove the screws holding the connectors and the terminal board in place and remove the connectors and the terminal board.

9.2.5.1 Reassembly

To reassemble the terminal board, reverse the steps in section 9.2.5.

Note :

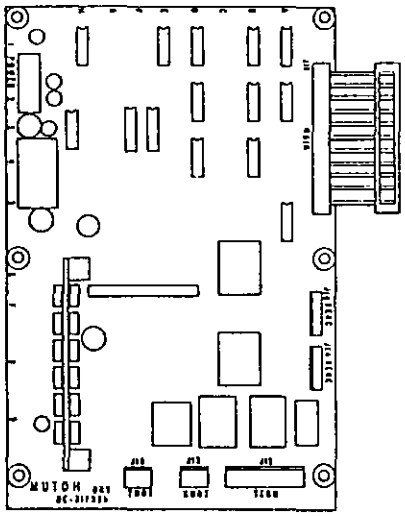
Set the DIP switches on the terminal board as follows.
They must be set up according to the plotter mechanism, such as plotter size.



9.2.3 Disassembling the Driver Board

Step 1
Open the board box.

Step 2
Remove the connectors and the screws from the board, then remove the board.

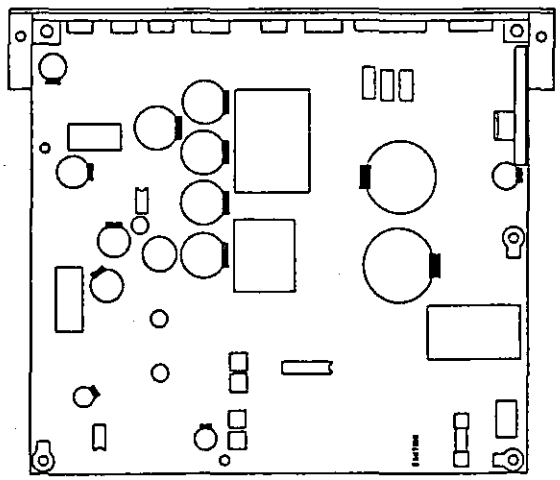


9.2.3.1 Reassembly
To reassemble, reverse the steps in section 9.2.3.

9.2.4 Disassembling the Power Board

Step 1
Open the board box.

Step 2
Remove the connectors and the screws from the board, and then remove the board.



9.2.4.1 Reassembly
To reassemble, reverse the steps in section 9.2.4.

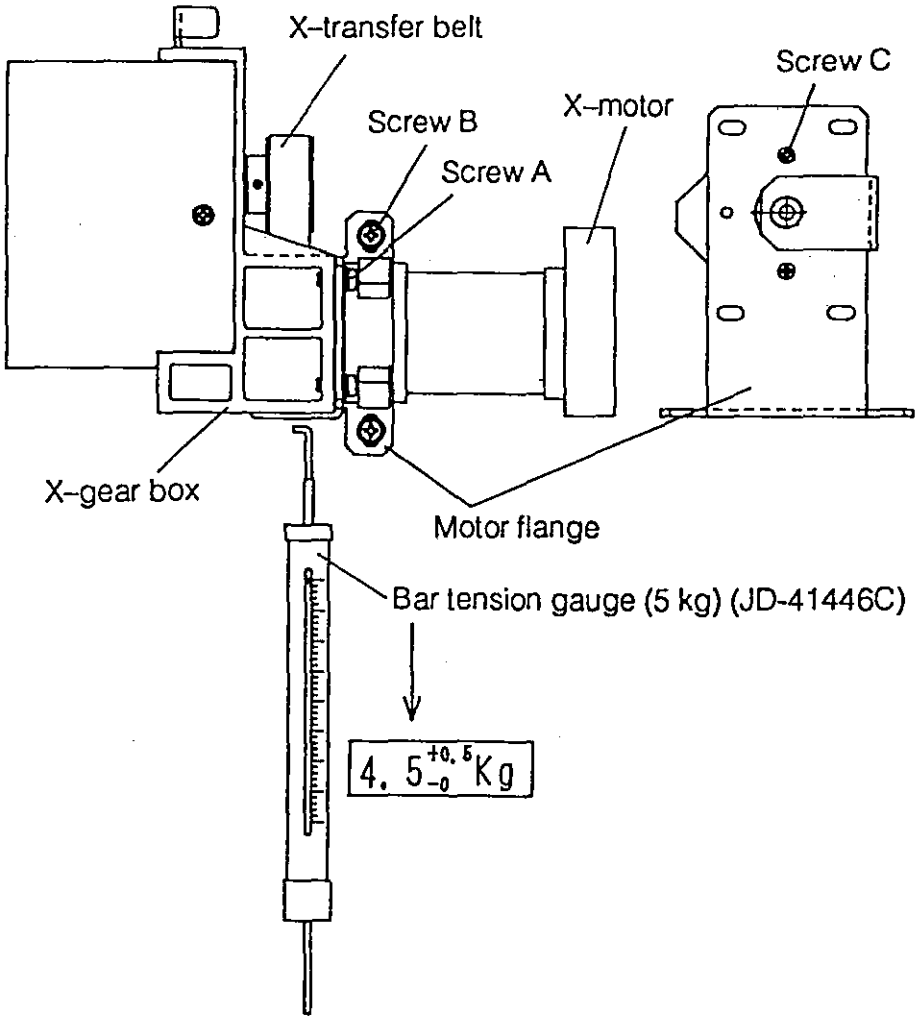
9.2.7 *Disassembling the X-Motor Assembly*

Step 1.
Remove cover (Right).

Step 2.
Open the board box and remove the connectors(J13, J14). Pull out the cable and put it on the top of the base.

Step 3.
Remove screws A and B. Remove the X-motor flange from the X-gear box.

Step 4.
Remove screw C, and remove the motor from the X-motor flange.



9.2.6 Disassembling the Control Panel Board

Step 1.
Remove cover (Left).

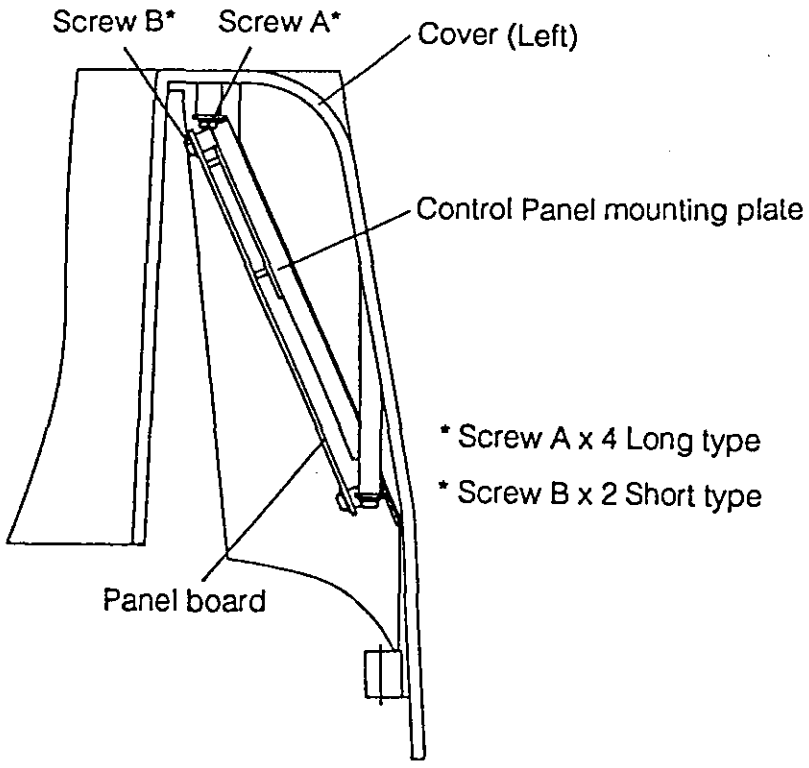
Step 2.
Open the board box. Remove the connector (J21) from the main board and pull it out to the top of the base.

Step 3.
Remove screw A. Then, remove the panel mounting plate from the cover.

Step 4.
Pull out the connector of the panel switch and remove screw B.
Remove the panel board.

9.2.6.1 Reassembly

To reassemble the control panel board, reverse the steps in section 9.2.6.



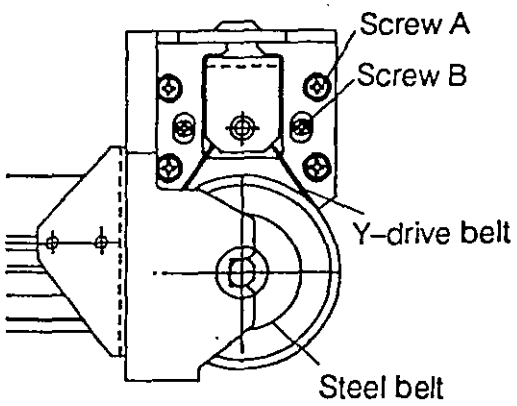
9.2.8 Disassembling the Y-Motor Assembly

Step 1.
Remove cover (Right).

Step 2.
Open the board box and remove the encoder and motor connectors (J15, J16). Pull out the cable and put it on the upper side of the base.

Step 3.
Remove screw A and relax the belt tension.

Step 4.
Remove screw B and then remove the motor.



9.2.8.1 Reassembly

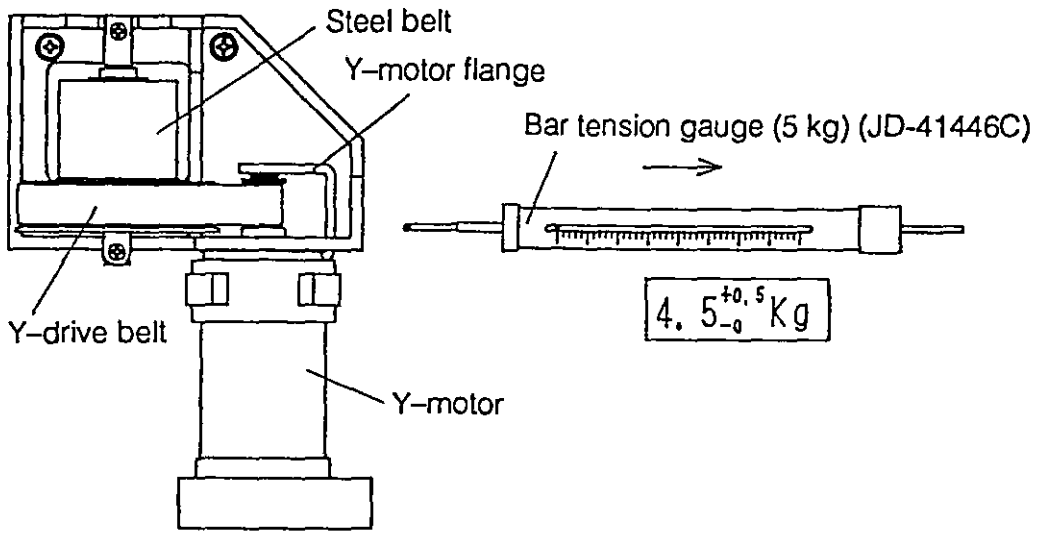
Step 1.
Attach the motor to the motor plate with screw B.

Step 2.
Tighten screw A a couple of turns.

Step 3.
Hook the tension jig to the Y-motor flange and adjust the jig to get 4.5 kg of tension on the Y-drive belt.

Step 4.
Tighten screw A.

Note:
Grease the replaced Y-transfer belt.



9.2.7.1 Reassembly

Step 1.
Fasten the motor to the X–motor flange with screw C.

Step 2.
Tighten screws A and B a couple of turns.

Step 3.
Hook the tension jig to the X–motor flange and adjust the jig to get 4.5 kg of tension on the X–drive belt.

Step 4.
Tighten screws A and B.

Note:
Grease the replaced X–transfer belt.

9.2.10.1 Reassembly

To reassemble the pressure lever sensor, reverse the steps in section 9.2.10.

9.2.11 Disassembling the Paper Sensors

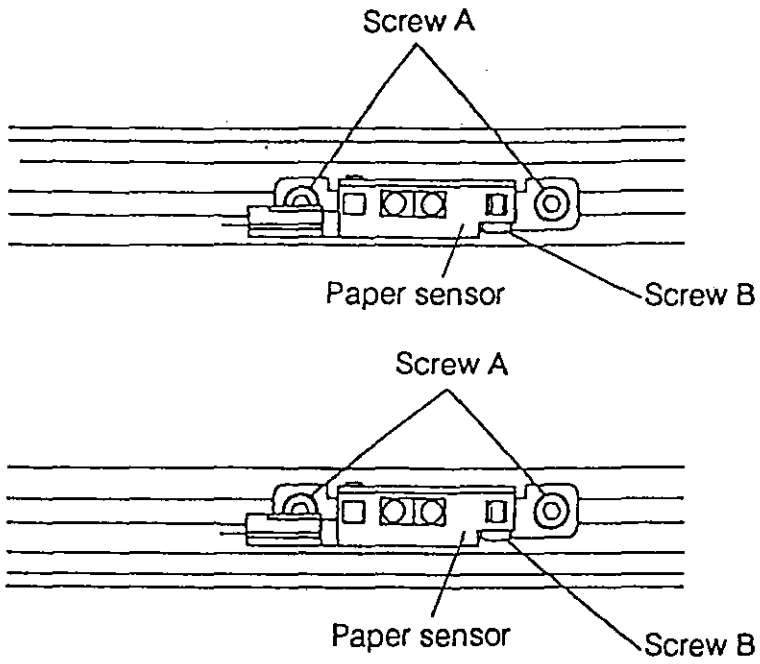
Step 1.
Remove the grid cover.

Step 2.
Pull out the connector and then remove screw A.

Step 3.
Remove screw B and then remove the paper sensors

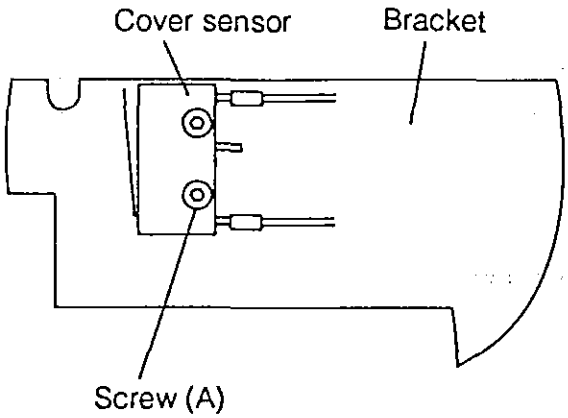
9.2.11.1 Reassembly

To reassemble the paper sensors, reverse the steps in section 9.2.11.



9.2.9 Disassembling the Cover Sensor

Step 1.
Remove cover (Left).



Step 2.
Remove screw A and terminaru connector (J410), then remove the sensor.

9.2.9.1 Reassembly

Step 1.
To reassemble the cover sensor, reverse the steps in section 9.2.6.

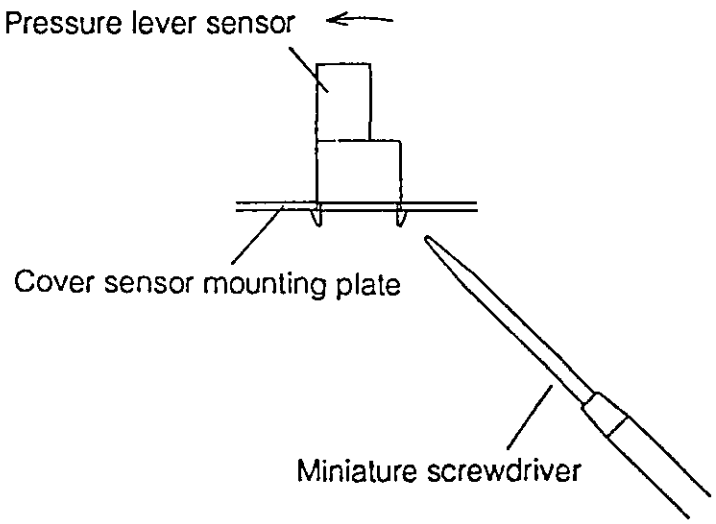
Step 2.
Open and close the acrylic cover and check for a click

9.2.10 Disassembling the Pressure Lever Sensor

Step 1.
Remove cover (Left).

Step 2.
Remove the sensor connector from the terminal board.

Step 3.
Rotate the sensor as shown in the following figure or push and remove the hook.



9.2.13 Disassembling the Moving Coil

Step 1.
Remove the head.

Step 2.
Remove screw A to free the moving coil.

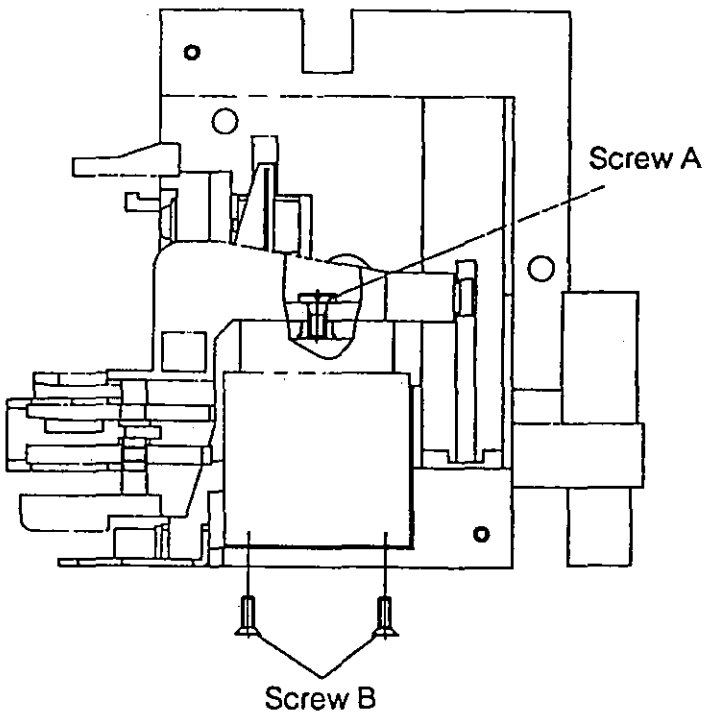
Step 3.
Remove screw B from the yoke and then remove the moving coil.

9.2.13.1 Reassembly

Step 1.
To reassemble the moving coil, reverse the steps in section 9.2.13.

Step 2.
When the moving coil is replaced, run the Diagnostic test to adjust pen force.

CAUTION!
After assembling the moving coil, be sure the yoke is not too close to the moving coil.



9.2.12 Disassembling the Vacuum Fan

Step 1.
Remove the cover (Left).

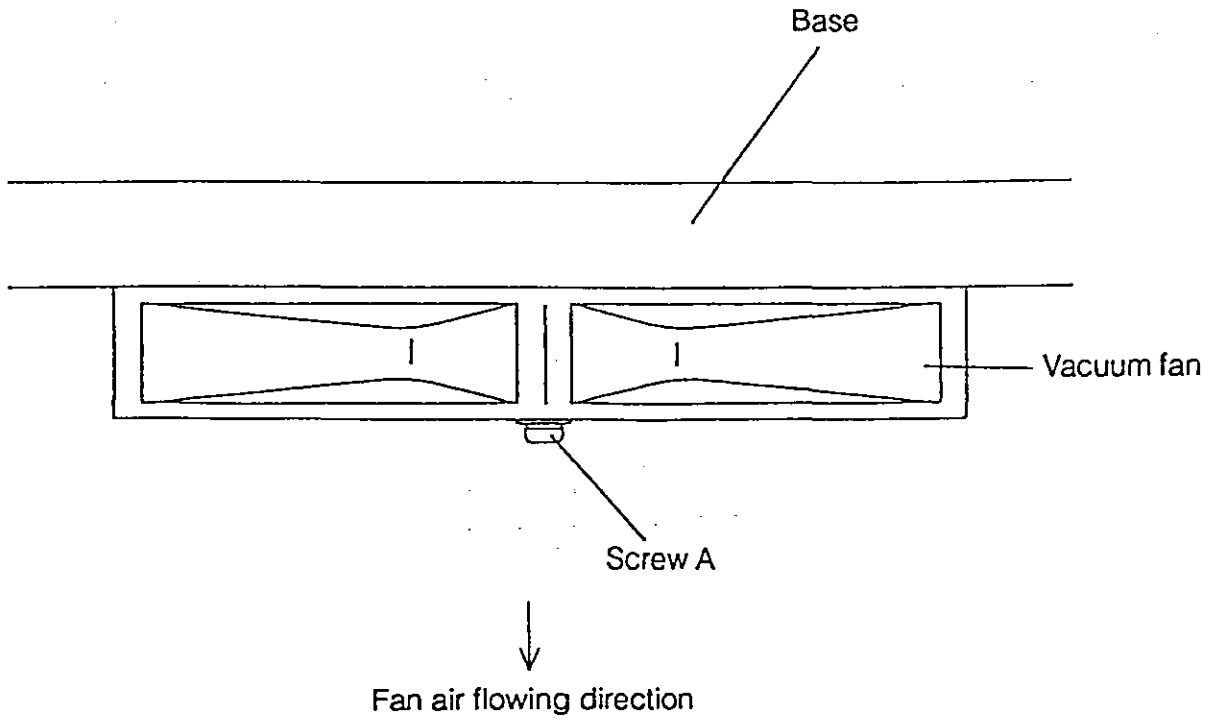
Step 2.
Open the board box.

Step 3.
Remove the connectors (J403, J404) from the fan on the terminal board.

Step 4.
Remove screw A and then remove the fan.

9.2.12.1 Reassembly

To reassemble the vacuum fan, reverse the steps in section 9.2.12.



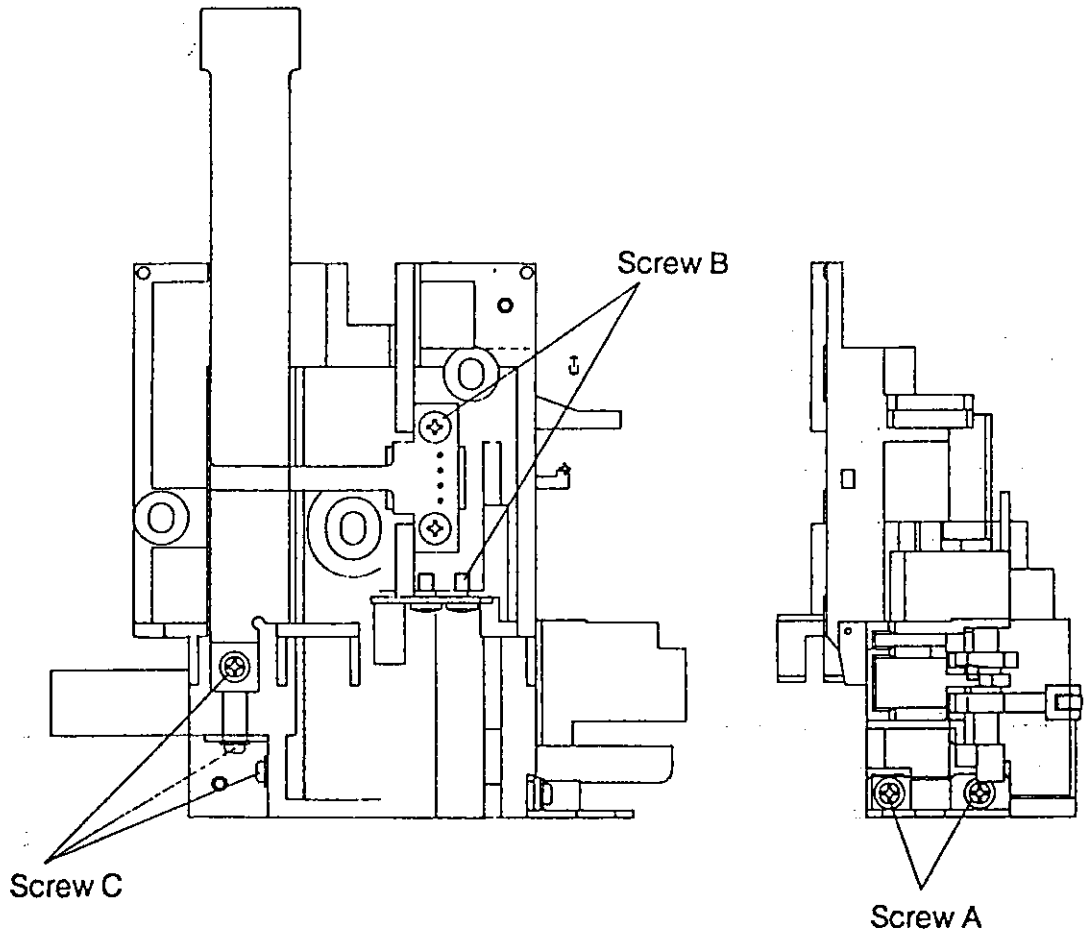
Step 2.

Start the self-diagnosis and adjust the following :

- Y-home position adjustment (Y-ORIGIN)
- Pen change position adjustment (P-CHNG-Y)
- Pen change height adjustment (P-CHNG-Z)
- Pen head height adjustment (HEAD)

CAUTION!

After the pen head sensor assembly is assembled, be sure the Y-Origin sensor is not too close to the screening plate of the pressure arm and stocker base.



9.2.14 Disassembling the Pen Head Sensor Assembly (Head Encoder, Y-Origin Sensor and Centerpiece Sensor)

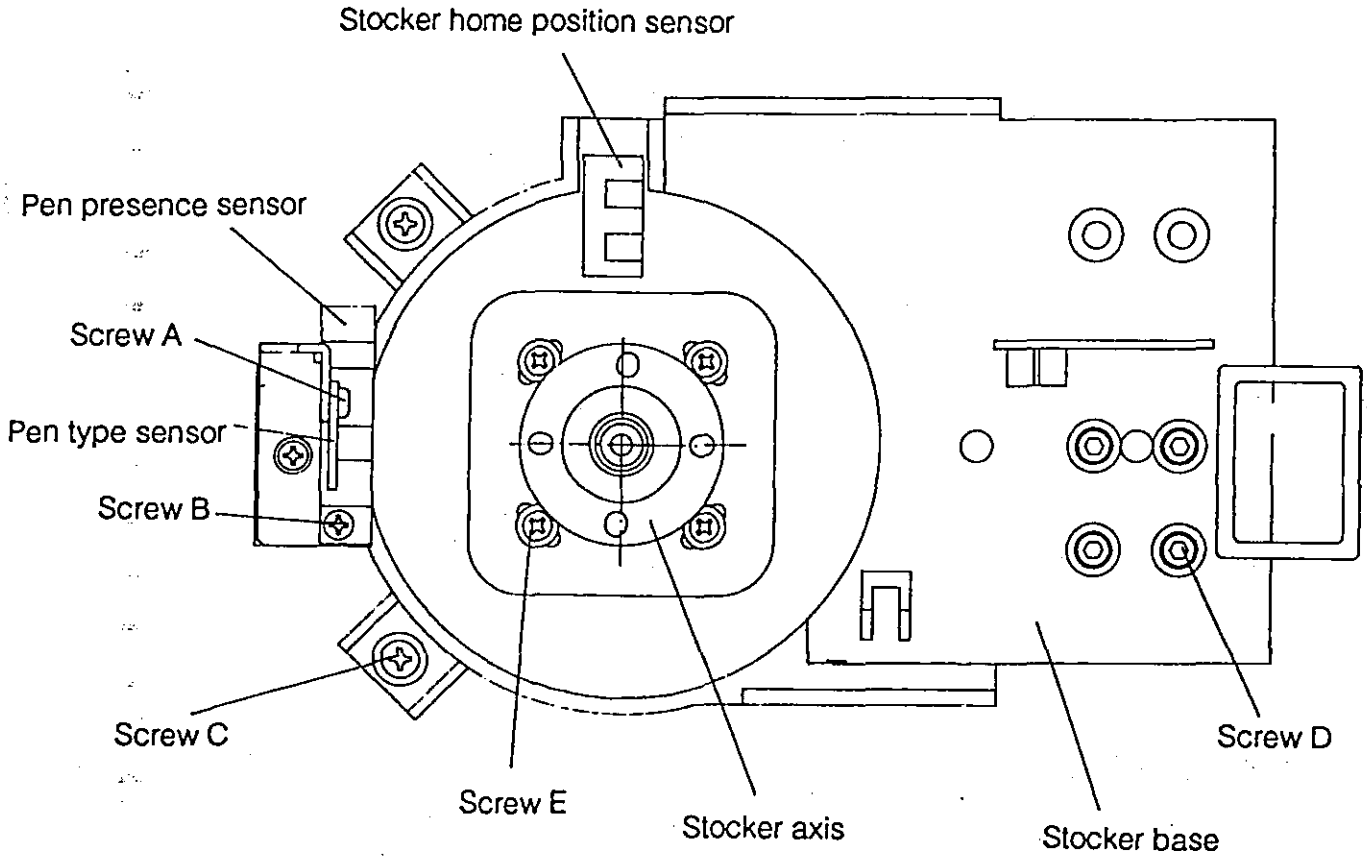
Step 1.
Remove the Head.

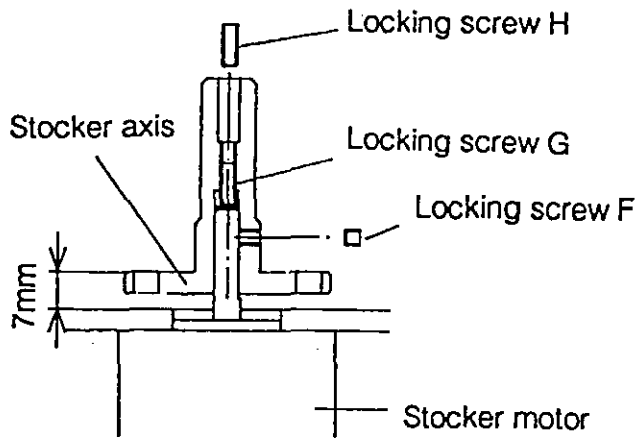
Step 2.
Remove screw A and then remove the pencil guide and centerpiece sensor.

Step 3.
Remove screws B and C. Then remove the flexible cable.

9.2.14.1 Reassembly

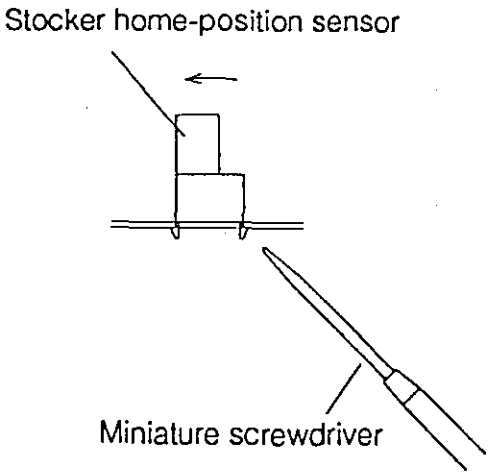
Step 1.
To reassemble the pen head sensor assembly, reverse the disassembly steps.


Stocker home position sensor
Pen presence sensor
Screw A
Pen type sensor
Screw B
Screw C
Screw E
Stocker axis
Stocker base
Screw D


Locking screw H
Stocker axis
Locking screw G
Locking screw F
7mm
Stocker motor

9.2.15 Disassembling the Stocker Home Position Sensor

Step 1.
Remove the sensor connector (J407) from the terminal board.



Step 2.
Rotate the sensor as shown in the above figure or push and remove the hook.

9.2.15.1 Reassembly

To reassemble the stocker home position sensor, reverse the steps in section 9.2.15.

9.2.16 Disassembling the Pen Type Sensor Board

Step 1.
Remove cover (Left).

Step 2.
Remove the connector (J60) from the pen type sensor board.

Step 3.
Remove screw A and then remove the pen type sensor board.

9.2.16.1 Reassembly

To reassemble the pen type sensor board, reverse the steps in section 9.2.16

9.2.18 Disassembling the Stocker Motor

Refer to the illustration in section 9.2.16.

Step 1.
Remove cover (Left).

Step 2.
Remove the connector (J402) from the terminal board.

Step 3.
Remove screws C and D and then remove the stocker base from the X-rail.

Step 4.
Loosen locking screw F and then remove the stocker axis.

Step 5.
Remove screw E and then remove the stocker motor.

Note:
To remove screw D, use a special wrench (JD-41564).

9.2.18.1 Reassembly

Refer to the illustration in section 9.2.16.

Step 1.
Install the stocker motor. Tighten screw E a couple of turns.

Step 2.
When the motor is in place, adjust the stocker axis height.

a. Remove locking screw H.

b. Set the stocker and start the self-diagnosis.

c. Press the **F4** key to select P-CHNG-Y.

Press the **ENTER** key to rotate the stocker and to move the head to the adjustment position.

In this status, take out the stocker, and lift or lower locking screw G so that the height of the upper side of the stocker can be equal to the height of the upper side of the head collar.

* ADJUST -05*
Y-ORGN P-CHNG-Y
P-SHNG-Z
XP-CR

If the stocker does not detect the home position with the stocker initialized or stops at a position as shown below, shake the stocker motor and adjust the motor until it stops at an appropriate position.

Pen Type Identification List

		Four ID Mark Positions			
		1 (Top)	2	3	4 (Bottom)
Ink pen	Disposable	•	•		
	Refillable	•	•	•	
	Disposable	•	•	•	•
Ceramic-tip pen		•	•		•
Water-based ballpoint pen		•		•	•
Oil-based ballpoint pen		•			
Pencil	0.2 mm	•		•	
	0.3 mm	•			•
	0.4 mm		•		
	0.5 mm		•		•
	0.7 mm		•	•	
Knife	1			•	•
	2				•
	3			•	

9.2.17 Disassembling the Pen Presence Sensor

Step 1.
Remove cover (Left).

Step 2.
Remove the connector from the sensor.

Step 3.
Remove screw B and then remove the sensor.

9.2.17.1 Reassembly

To reassemble the pen presence sensor, reverse the steps in section 9.2.17.

9.3 Lubricating the Parts

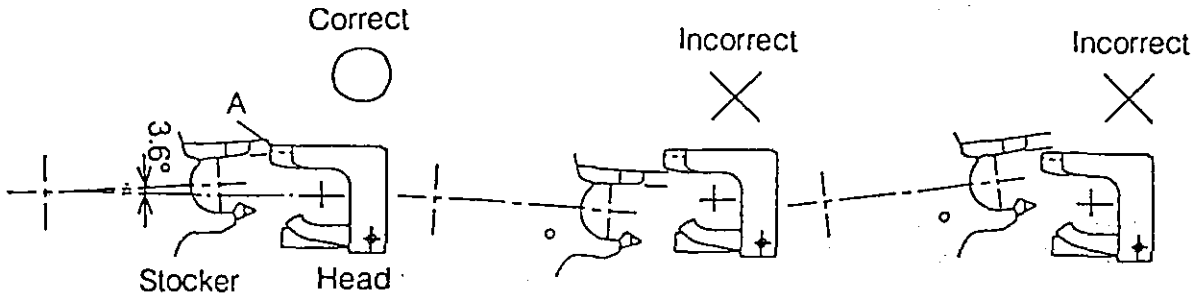
When replacing parts, lubricate the new parts as follows:

Lubricated parts	Lubricating oil (Factory name)	Lubrication period
X-driving belt (timing belt)	Shin-etsu Silicone Grease G-501 (Shin-etsu Chemical Co., Ltd.)	Whenever the belt is replaced
X-driven belt (timing belt)	Same as above	Whenever the belt is replaced
Y-driving belt (timing belt)	Same as above	Whenever the belt is replaced
Head cursor bearing (running block)	SUMI GREASE SPRAY 259664 (SUMICO Co., Ltd)	Whenever the stainless auxiliary plate in the running bloc is replaced
Head sub-axis	Standard machine oil #10	Whenever the head sub-axis is replaced
Y-rail	Shin-etsu Silicone Grease G-501 (Shin-etsu Chemical Co., Ltd)	Whenever the pressure base is replaced

d. After the adjustment is completed, tighten screw E and locking screws F and H.

Step 3.
After the adjustment, check the following check the following again.

- ◆ Pen change position adjustment (P-CHNG-Y)
- ◆ Pen change height adjustment (P-CHNG-Z)
- ◆ Stocker pen change (stocker)



CAUTION!

If you insert or extract the stocker while pen change Y is being performed for motor angle adjustment, the stocker moves to the pen change position and does not move to the correct position shown in the drawing. Once you have extracted the stocker, perform pen change Y again.

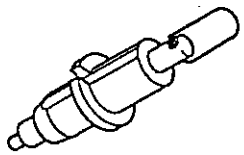
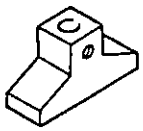
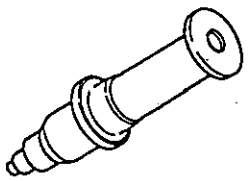
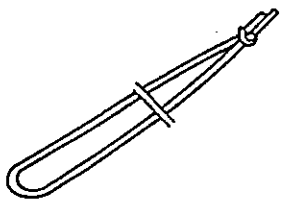
Edge A must be within the range of stocker projection width.

10.6 Miscellaneous

PART NAME	PART NUMBER
Caster Assembly (with locking)	DE-44932
Caster Assembly (without locking)	DE-44933

Chapter 11
JIG TOOL LIST

PART NAME	PART NUMBER	QUANTITY
Adjustment Pen (10 g)	JD-41440	1
Adjustment Pen Knock Plate	JD-30292	1
Head Height Jig (1.3 mm)	JD-41547	1
Pressure Measurement Attachment	JD-41563	1
Steel Belt Tension Attachment	JD-41565	1
Special Hexagon Wrench	JD-41564	1
Wrench (Opposite 5.5 mm, 7 mm)	JD-41451	1
Bar Tension Gauge (50 g)	JD-41446A	1
Bar Tension Gauge (500 g)	JD-41446B	1
Bar Tension Gauge (5 kg)	JD-41446C	1
Screwdriver (Phillips) N° 1 100 m	JD-41525	1
Screwdriver (Philips) N° 2 200 mm	JD-41524	1
Screwdriver 2.5 x 75 mm	JD-41566	1
Screwdriver (Slotted) 6 x 100 mm	JD-41567	1
Box Driver (Opposite Side 5.5 mm)	JD-41528	1
Hexagon Wrench (Opposite Side 1.5 mm)	JD-41568	1
Hexagon Wrench (Opposite Side 3.0 mm)	JD-41569	1
Hexagon Wrench (Opposite Side 6.0 mm)	JD-41570	1

Part Name	Part No	Shape
Adjustment pen (for Plotting roller height, pressure 10g)	JD-41440	
Steel belt tension attachment	JD-41565	
Adjustment pen knock plate	JD-30292	
Pressure measurement attachment	JD-41563	

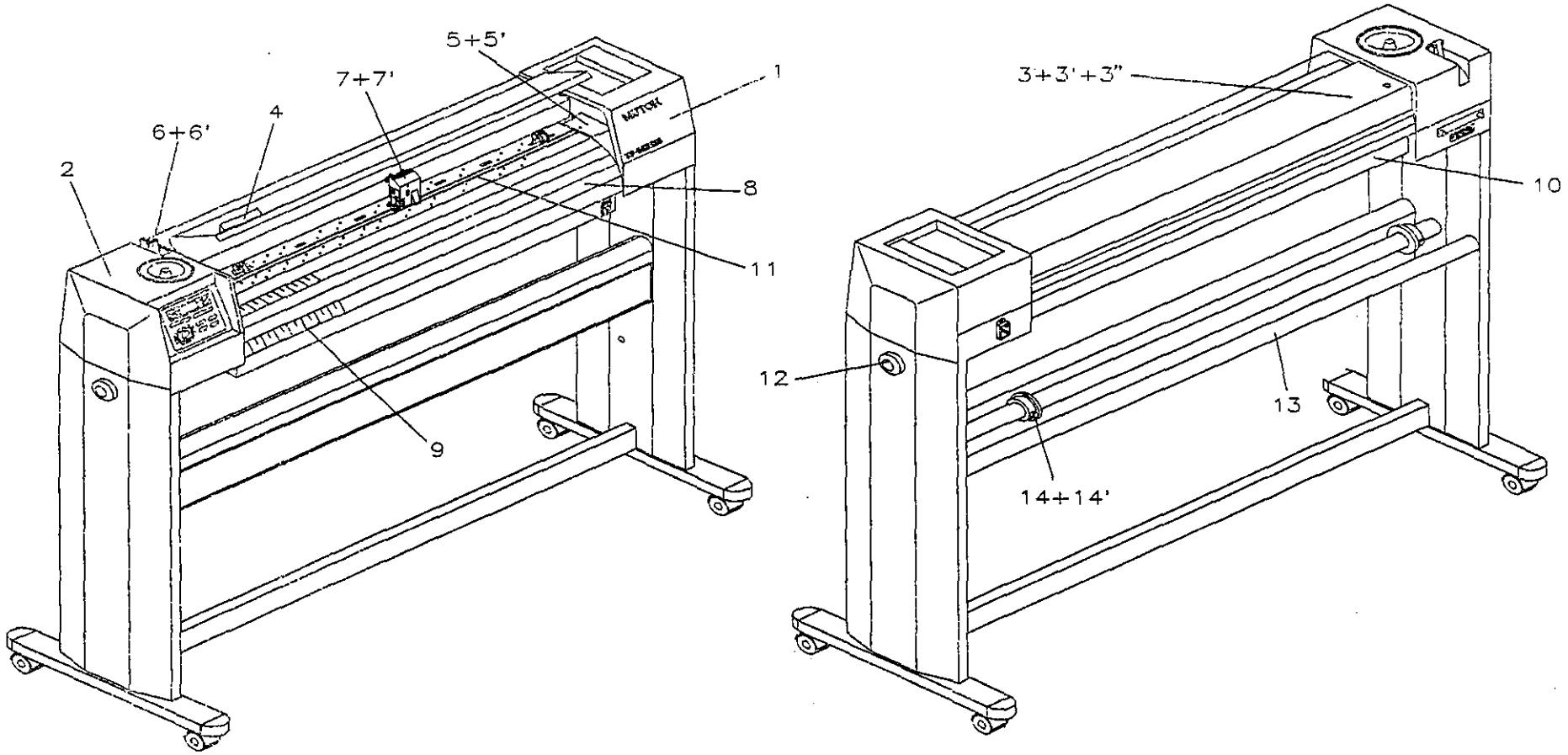


Figure 1. XP-C body and covers.

XP-C Body and Covers

Ref.	Description	Partnumber	Qty.
1	Cover right Assy	MY-6200-50009	1
2	Cover Left Assy	MY-5005-50018	1
3	Y-rail cover 620/621C	DE-20561A	1
3	Y-rail cover 940/941C	DE-20561B	1
3	Y-rail cover 1250/1251C	MY-12562	1
3'	Screw M3X6	DR-4001-43923	5
3"	Grounding plate	DE-45118	1
4	Acryl.cover assy 620/621C	MY-5010-31565	1
4	Acryl.cover assy 940/941C	MY-5000-31565	1
4	Acryl.cover assy 1250/1C	MY-1250-12565	1
5	Gearbox cover	DE-44775	1
5'	Screw M3X8	DR-4001-43329	1
6	Pressure lever knob	DE-31580	1
6'	Screw M3X6	DR-4005-43728	1
7	Penhead cover	ME-10081	1
7'	Screw M2.5X6	DR-4004-44662	2
8	Platen front 620/621C	MY-53601	1
8	Platen front 940/941C	MY-53611	1
8	Platen front 1250/1251C	MY-53621	1
9	Alignment stickers	LB-10016	2
10	Platen rear 620/621C	ME-53602	1
10	Platen rear 940/941C	ME-53612	1
10	Platen rear 1250/1251C	ME-53622	1
11	Grid cover 621C (No roll)	ME-53600	1
11	Grid cover 620C (Plot roll)	ME-53700	1
11	Grid cover 941C (No roll)	ME-53610	1
11	Grid cover 940C (Plot roll)	ME-53710	1
11	Grid cover 1251C (No roll)	ME-53620	1
11	Grid cover 1250C (Plot roll	ME-53720	1
12	Installation knob	DE-44774	2
13	Conveyer roll 620/621C	ME-10605	2
13	Conveyer roll 940/941C	ME-10615	2
13	Conveyer roll 1250/1251C	ME-10625	2
14	Flange	ME-10606	2
14'	Plastic wing screw M5X15	BM-9005-00501	2

Acrylic cover Assy XP-C

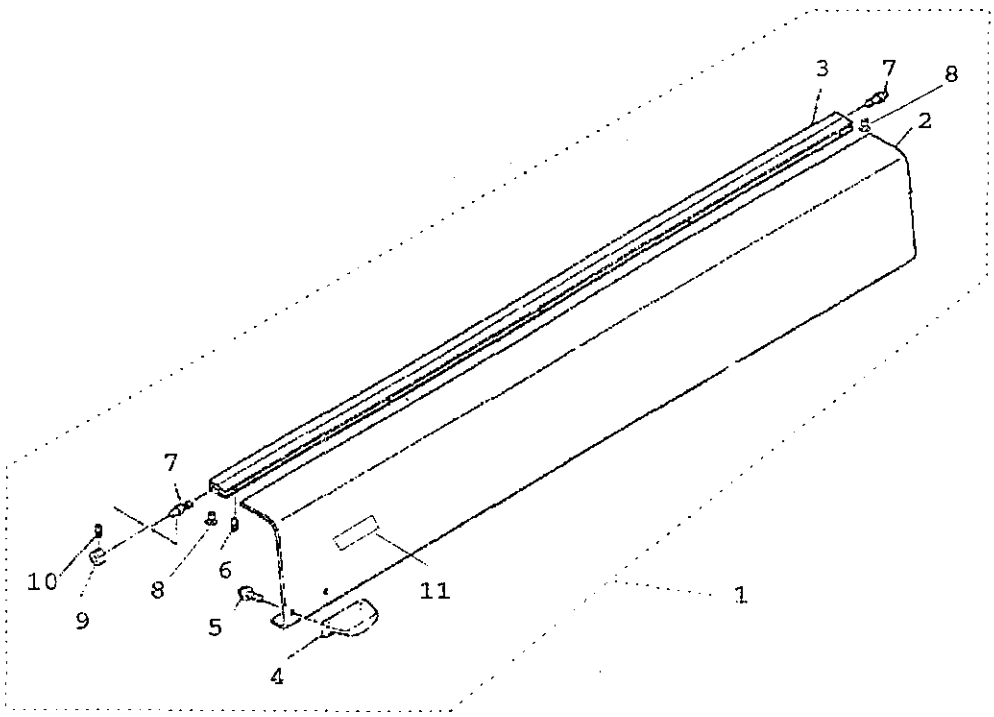


Figure 2.

Ref.	Description	Partnumber	Qty
1	Acrylic cover Assy 620/621C	MY-5010-31565	1
1	Acrylic cover Assy 940/941C	MY-5000-31565	1
1	Acrylic cover Assy 1250/1C	MY-1250-12565	1
2	Acrylic cover 620/621C	DE-31565A	1
2	Acrylic cover 940/941C	DE-31565B	1
2	Acrylic cover 1250/1251C	ME-12565	1
3	Acryl.cover guide 620/621C	DE-31566A	1
3	Acryl.cover guide 940/941C	DE-31566B	1
3	Acryl.cover guide 1250/1C	ME-12566	1
4	Cover knob	DE-31567	1
5	Screw M3X6	DR-4001-43923	2
6	Set screw M3X3	DR-4007-44579	5
7	Cover shaft	DE-44832	2
8	Screw M2X5	DR-4001-43327	2
9	Cam cover switch	DE-44908	1
10	Set screw M3X3	DR-4007-43352	1
11	Type label XP-620C	LB-50020	1
11	Type label XP-621C	LB-50021	1
11	Type label XP-940C	LB-50040	1
11	Type label XP-941C	LB-50041	1
11	Type label XP-1250C	LB-50050	1
11	Type label XP-1251C	LB-50051	1

Cover right Assy XP-C

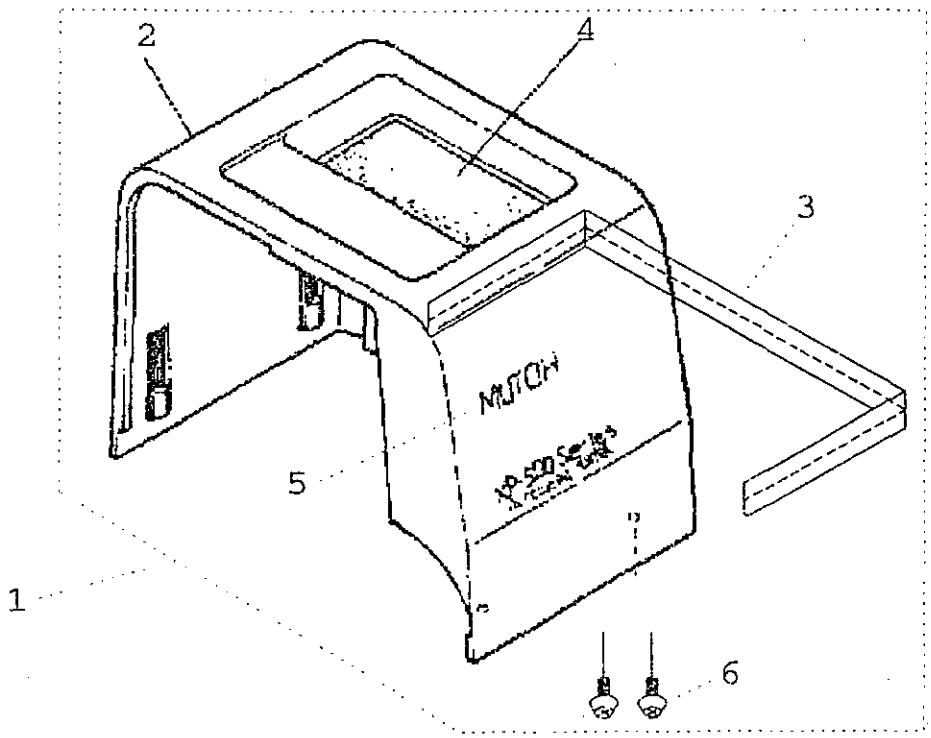


Figure 3.

Ref.	Description	Partnumber	Qty
1	Cover right Assy	MY-6200-50009	1
2	Cover right	DE-32709	1
3	Rubber	ME-10300	1
4	Sponge	DE-45207	1
5	MUTOH label	LB-50000	1
-	--------	------	-
6	Screw M3X25	DR-4005-44614	1

Cover left Assy XP-C

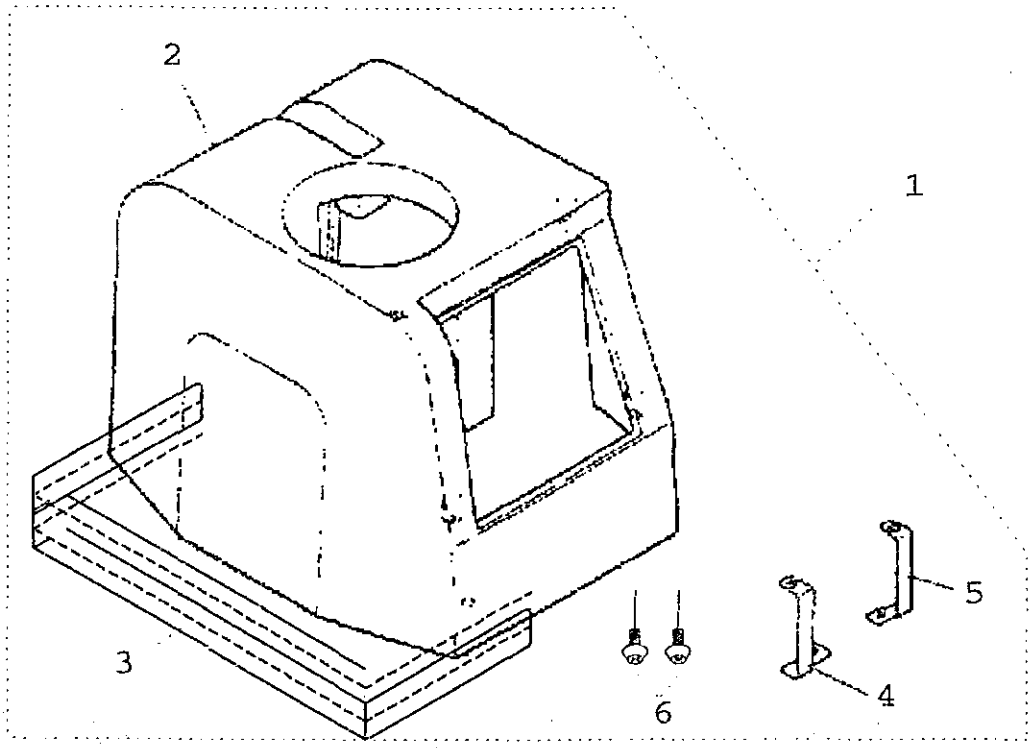


Figure 4.

Ref.	Description	Partnumber	Qty
1	Cover left Assy (Without panel)	MY-5005-50018	1
2	Cover left	DE-10360	1
3	Rubber	ME-10300	1
4	Ground plate	DE-45383	1
5	Ground plate	DE-45116	1
-	-------	-------	-
6	Screw M3X25	DR-4005-44614	4

Panel Assy XP-C

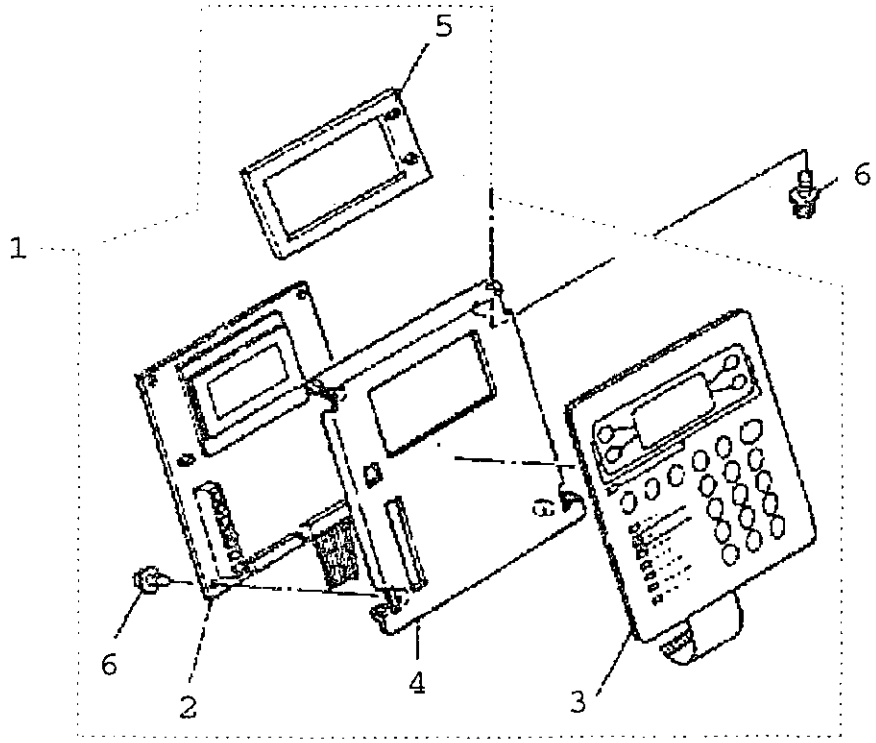


Figure 5.

Ref.	Description	Partnumber	Qty
1	Panel Assy (old version) with numerical keypad.	EY-5005-50010	1
2	Panel Pcb Assy	DE-31495	1
3	Switch panel	DE-20573	1
4	Plate switch panel	DE-31564	1
5	LCD dust cover	DE-45201	1
6	Screw M3X6	DR-4001-43923	8
-	----------	--------	-
1	Panel Assy (new version) with simplified keypad.	EY-6200-50010	1
2	Panel Pcb Assy	EY-50495	1
3	Switch panel	EY-50000	1
4	Plate switch panel	ME-10564	1
5	LCD dust cover	DE-45201	1
6	Screw M3X6	DR-4001-43923	8

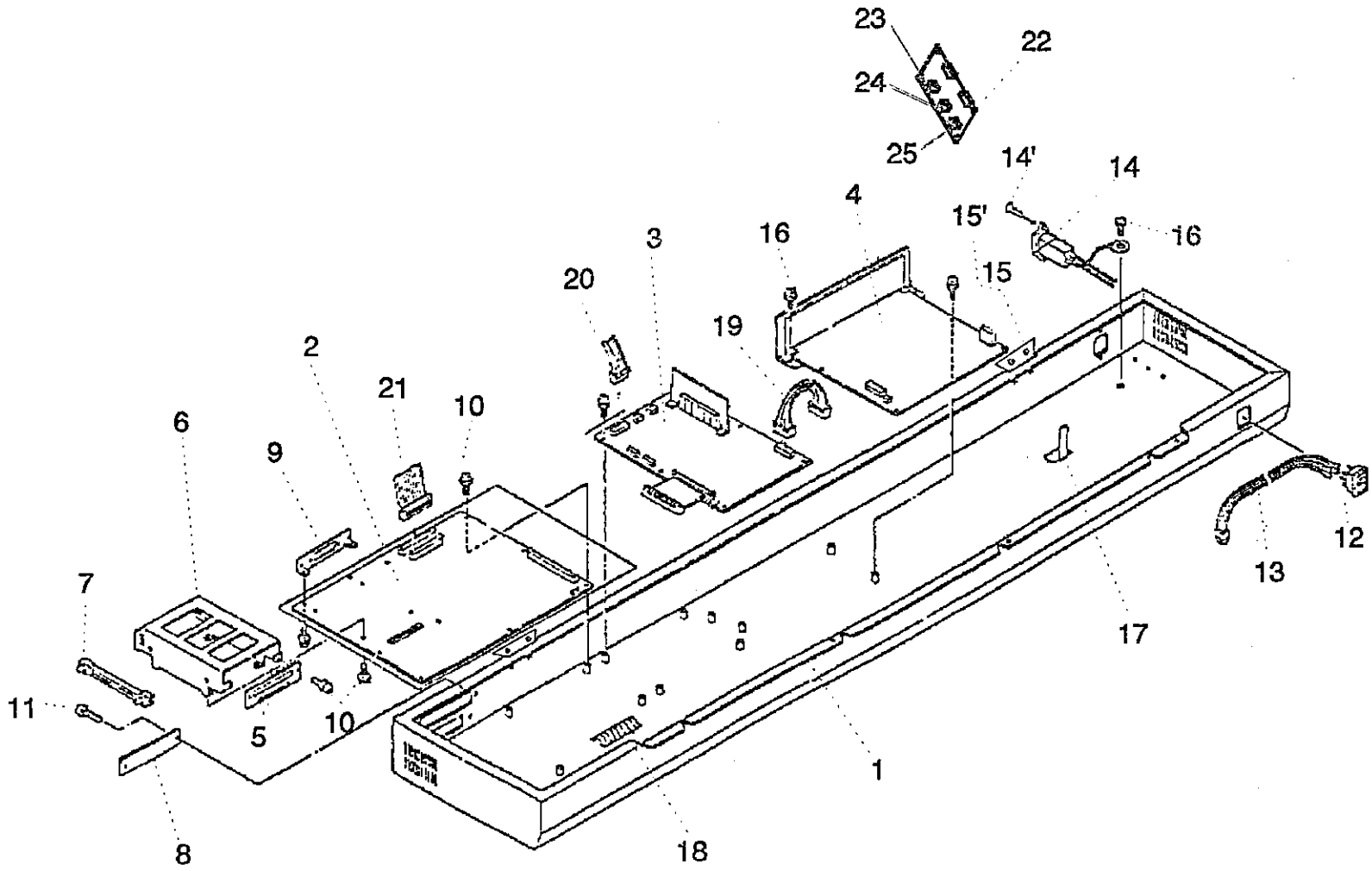


Figure 6. Printed circuit Board box XP-C

Printed circuit board box XP-C

Ref.	Description	Partnumber	Qty
1	PCB box XP-620C	EM-51000	1
1	PCB box XP-940C	EM-51100	1
1	PCB box XP-1250C	EM-51250	1
2	Main-pcb Assy	EY-39756	1
3	Driver pcb Assy	DE-31757	1
4	Power supply pcb	DE-31396	1
5	Interface Pcb	DE-44743	1
6	Bracket for interface	DE-20568	1
7	Guide rail	DE-44573	2
8	I/F plate	DE-44245	1
9	I/O connector bracket	DE-44798	1
10	Screw M3X6	DR-4001-43923	30-34
11	Screw M3X10	DR-4005-44129	2
12	ON/OFF switch	DE-43074	1
13	Switch cable XP-620C	DE-44746	1
13	Switch cable XP-940C	DE-44747	1
13	Switch cable XP-1250C	MK-81747	1
14	Power inlet	DE-44745	1
14'	Screw M3X6	DP-4002-40217	2
15	Hinge	DE-44113	2
15'	Screw M4X8	DR-4001-43396	8
16	Screw M3X4	DR-4001-43993	4
17	Cable guide	AE-91065	6
18	Shielding strip	DE-45115	2
19	Cable P/S → DRV pcb	DE-44750	1
20	Cable J12→J400 Term pcb	MK-55680	1
21	Cable main pcb J22→Term	DE-44758	1
	ONLY XP-1250C		
22	PCB cable extension	EY-12500	1
23	EXT cable J13/J15 motor	MK-41013	2
24	EXT cable J14/J16 Enc.	MK-41014	2
25	EXT cable fan	MK-41250	1

Terminal board Assy XP-C

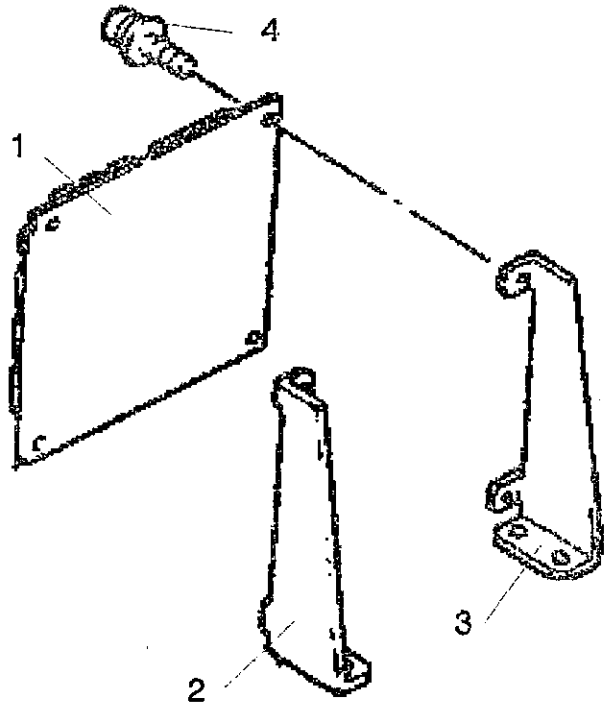


Figure 7.

Ref.	Description	Partnumber	Qty
#	Terminal board Assy	EY-6200-56600	1
1	Terminal Pcb	EY-31600	1
2	Bracket right	DE-45675	1
3	Bracket left	DE-45676	1
4	Screw M3X4	DR-4001-43993	8

Pen head flexcable Pcb Assy XP-C

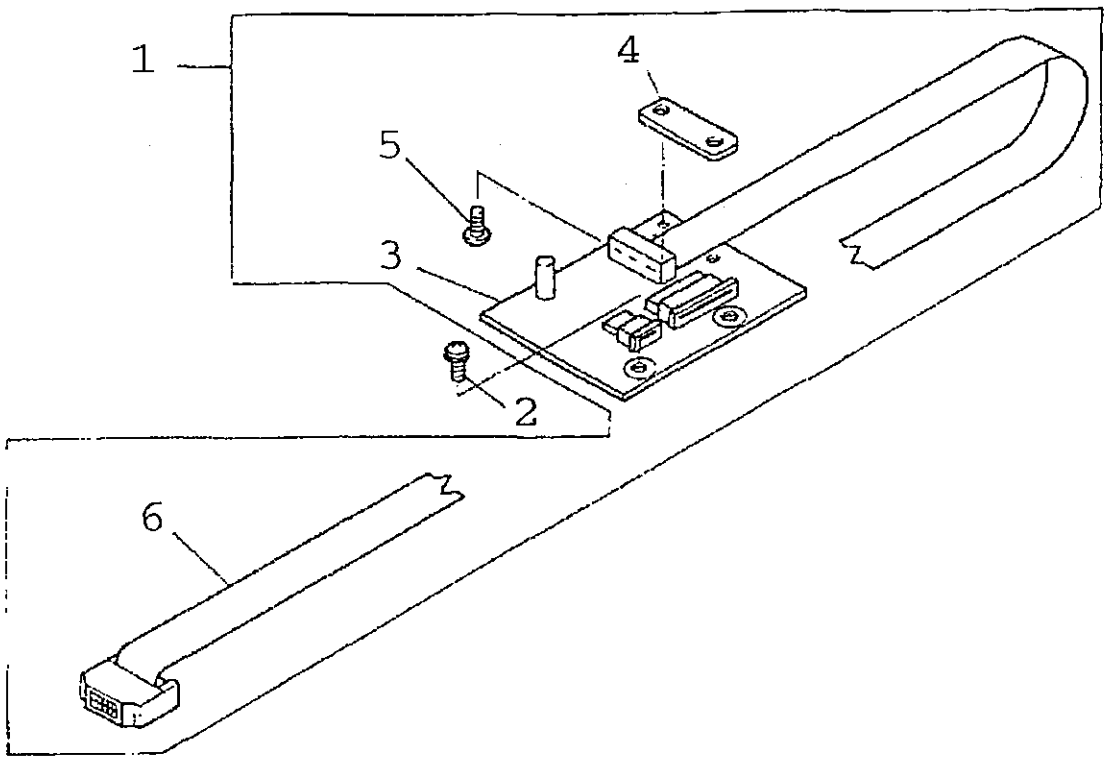


Figure 8.

Ref.	Description	Partnumber	Qty
1	Pen head flex cable Assy XP-620/621C	EY-5210-52100	1
1	Pen head flex cable Assy XP-940/941C	EY-5200-52100	1
1	Pen head flex cable Assy XP-1250/1251C	EY-1250-52100	1
2	Screw M3X4	DR-4001-43933	2
3	Penhead Pcb	EP-45679	1
4	Strain relief	DE-43067	1
5	Screw M3X5	DS-3151-41580	2
6	Flat cable	MK-61769	1

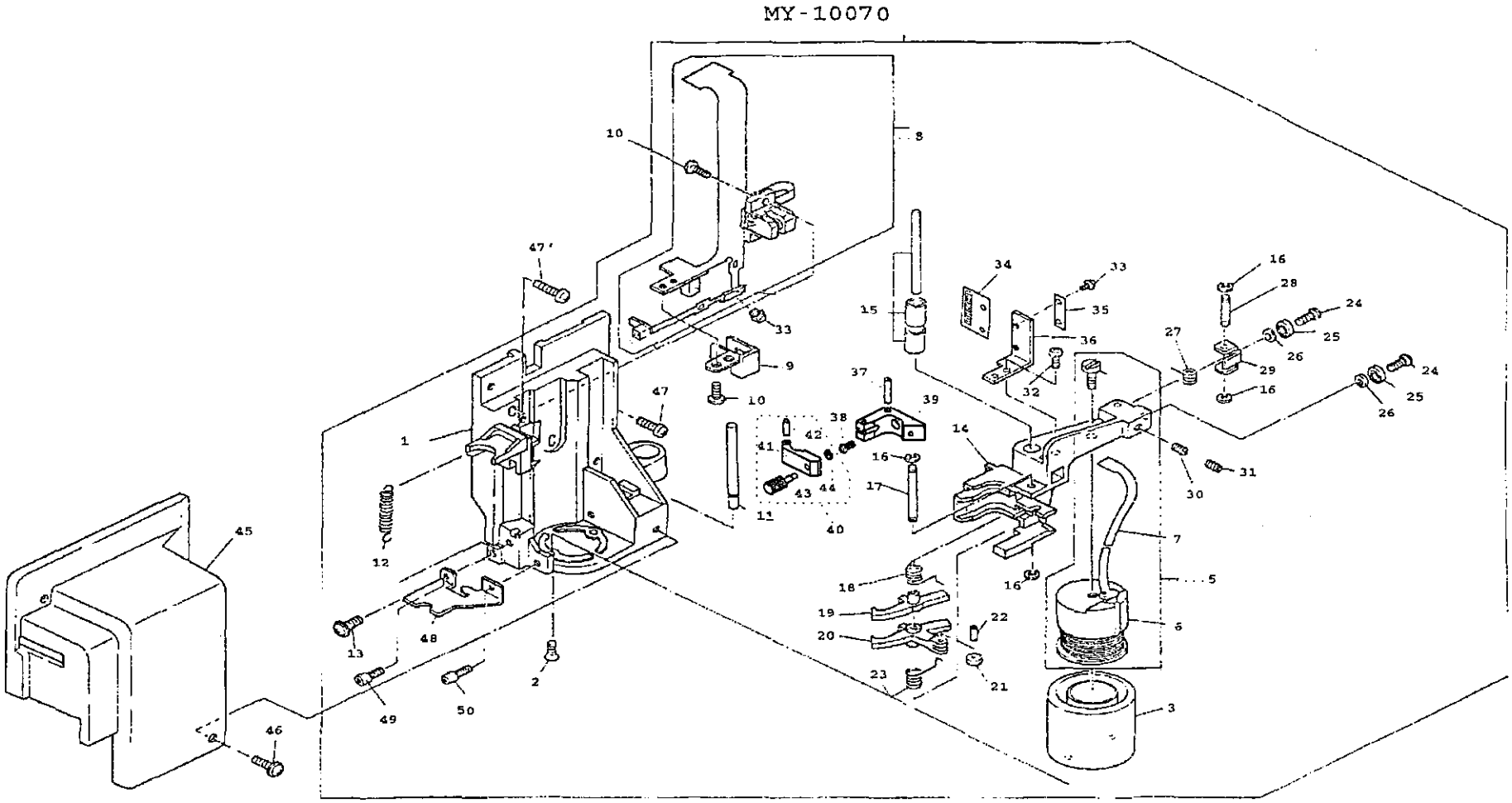


Figure 9. Penhead Assy XP-C

Penhead Assy XP-C

Ref.	Description	Partnumber	Qty
#	Penhead Assy	MY-10070	1
1	Pen head Base	ME-20572B	1
2	Screw M2X5	DR-4002-44296	2
3	Magnet MC	DE-44210	1
4	Screw MC	DR-4005-44675	1
5	Moving coil Assy	DE-44935	1
6	Moving coil	DE-44211	1
7	Flex cable MC	DE-44829	1
8	Sensor flex cable Assy	DE-45667	1
9	Y-detection sensor bracket	DE-45109	1
10	Screw M2.5X5 (sensor)	DR-4005-43721	4
11	Secondary shaft	DE-45668	1
12	Pen up spring	ME-10079	1
13	Screw M3X5	DR-4019-44677	2
14	Penholder arm	ME-10076	1
15	Linear bearing set	DE-45669	1
16	E-ring #1.5	DR-4014-41609	4
17	Finger shaft	DE-44215	1
18	Upper pen finger spring	DE-44630	1
19	Upper pen finger	DE-44213	1
20	Lower pen finger Assy	MY-44214	1
21	Pen finger roller	DE-44606B	1
22	Roller pin	DE-44607	1
23	Lower pen finger spring	DE-44217	1
24	Screw M3X5.9	DE-43596	2
25	Side bearing	DE-40270	2
26	Washer	DE-40453	1
27	Spring side roller	DE-44222	1
28	Shaft side roller	DE-44221	1
29	Bracket side roller	DE-44220	1
30	Set screw M3X5	DR-4007-43370	1
31	Set screw M3X3	DR-4007-44579	1
32	Screw M2X5	DR-4001-43327	2
33	Screw M2X3	DR-4001-43457	3
34	Grid scale	DE-45203	1
35	Scale plate	DE-45203	1
36	Scale bracket	DE-45205	1
37	Spring pin	ME-10078	1
38	Screw M2.5X10	BM-5000-025010	1
39	Knife catch base	MY-10073	1
40	Knife catch hook Assy	MY-10074	1
41	Knife catch hook	ME-10074	1
42	Spring pin	ME-10077	1
43	Knife catch knob	ME-10075	1
44	0-ring 1.3	BR-60015	1
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45	Penhead cover	ME-10081	1
46	Screw for cover M2.5X6	DR-4004-44662	2
47	Head fixing screw M3X8	DR-4001-43329	1
47'	" " M3X14	DR-4001-44613	1

Next page Cont'd.

Penhead Assy XP-C (Continued)

Ref.	Description	Partnumber	Qty
	Penhead Assy (Cont'd)		
	Plot roll models only :		
48	Pencil stopper bracket	DE-45670	1
49	Screw M2X5	DR-4008-44638	1
50	Screw M2X4	DR-4008-44616	1

Y-carriage XP-C

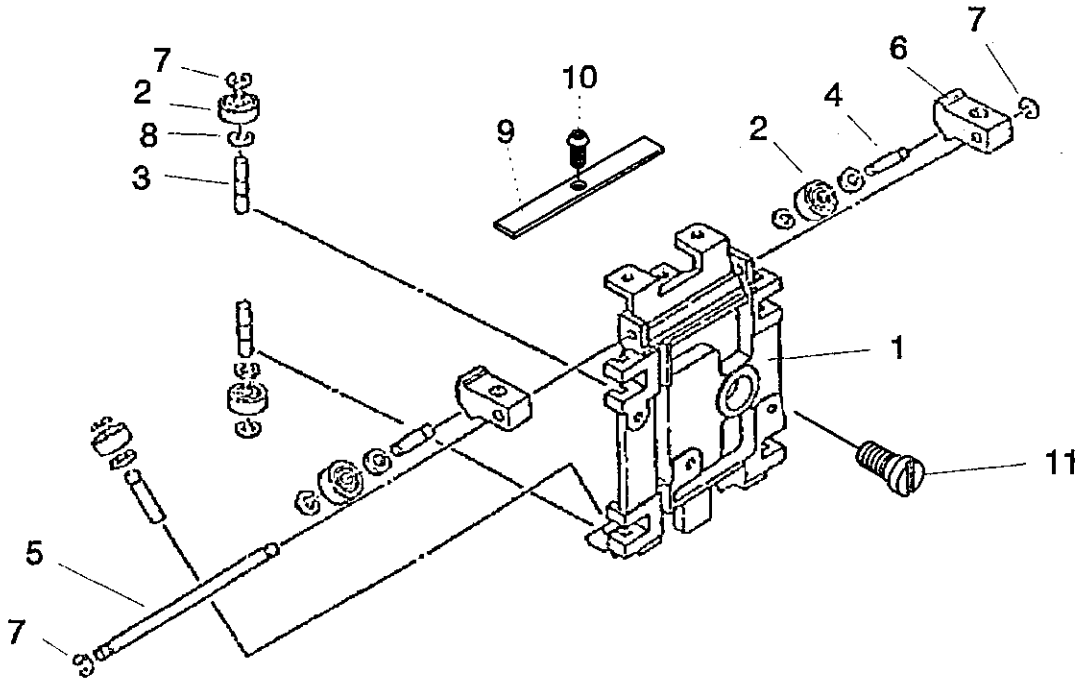

Figure 10.

Ref.	Description	Partnumber	Qty
#	Y-carriage Assy	MY-5005-55300	1
1	Carriage base	DE-20571	1
2	Bearing	DE-44197	8
3	Shaft (2 grooves)	DE-44198	4
4	Shaft (1 groove)	DE-44199	4
5	Shaft (long)	DE-44201	1
6	Arm	DE-44200	2
7	E-ring	DP-1012-40093	14
8	Spacer	DE-42051	4
	---	---	-
9	Blade spring	DE-45448	1
10	Screw M3X8	DR-4001-43995	1
11	Screw M4X8	DR-4001-43396	1

Y-rail Assy XP-C

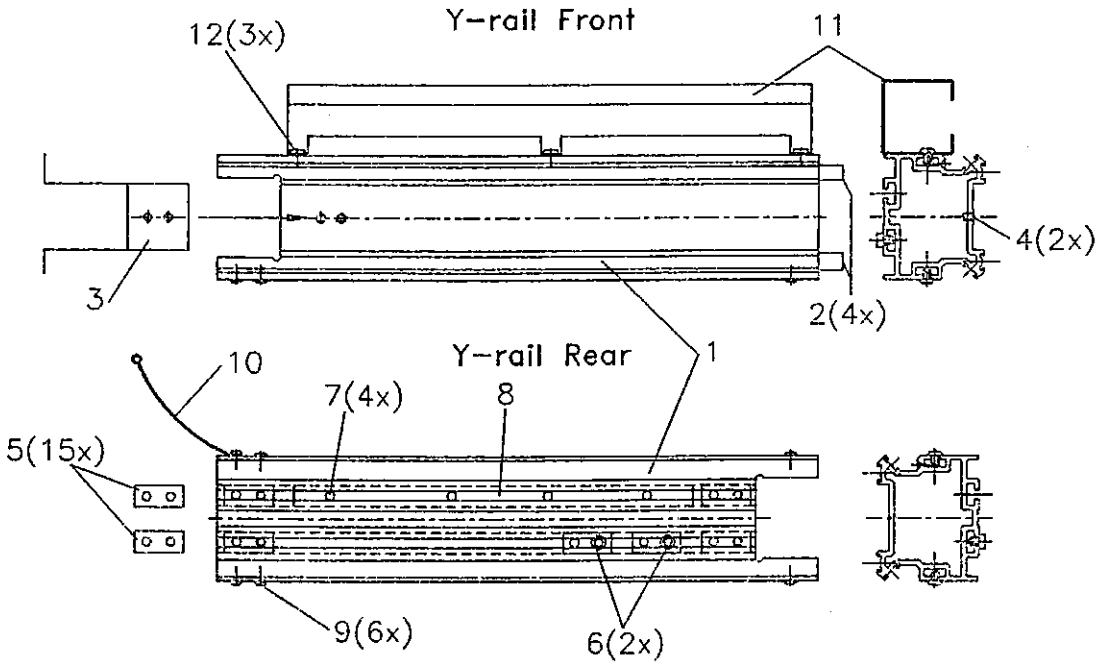

Figure 11.

Ref.	Description	Partnumber	Qty
1	Y-rail XP620/621C	DE-31560A	1
1	Y-rail XP940/941C	DE-31560B	1
1	Y-rail XP1250/1251C	ME-12560	1
2	Steel strip XP620/621C	DE-44171A	4
2	Steel strip XP940/941C	DE-44171B	4
2	Steel strip XP1250/1251C	ME-12171	4
3	Stopper bracket	DE-44172	1
4	Screw M4X5	DE-41789	2
5	Screwplate	DR-2164-41836	15
6	Hex bolt M4X6	DR-4008-41838	2
7	Set screw M3X3	DR-4007-43352	4
8	Pos.indication rail 620/1C	ME-10602	1
8	Pos.indication rail 940/1C	ME-10612	1
8	Pos.indication rail 1250/1C	ME-10622	1
9	Screw M4X10	DR-4001-43317	6
10	Ground cable Assy	DE-45110	1
11	Cable guide Assy 620/621C	MY-5010-52100	1
11	Cable guide Assy 940/941C	MY-5000-52100	1
11	Cable guide Assy 1250/1251C	MY-1250-52100	1
12	Screw M3X5.9	GA-1004-40013	3

Steel belt Assy XP-C

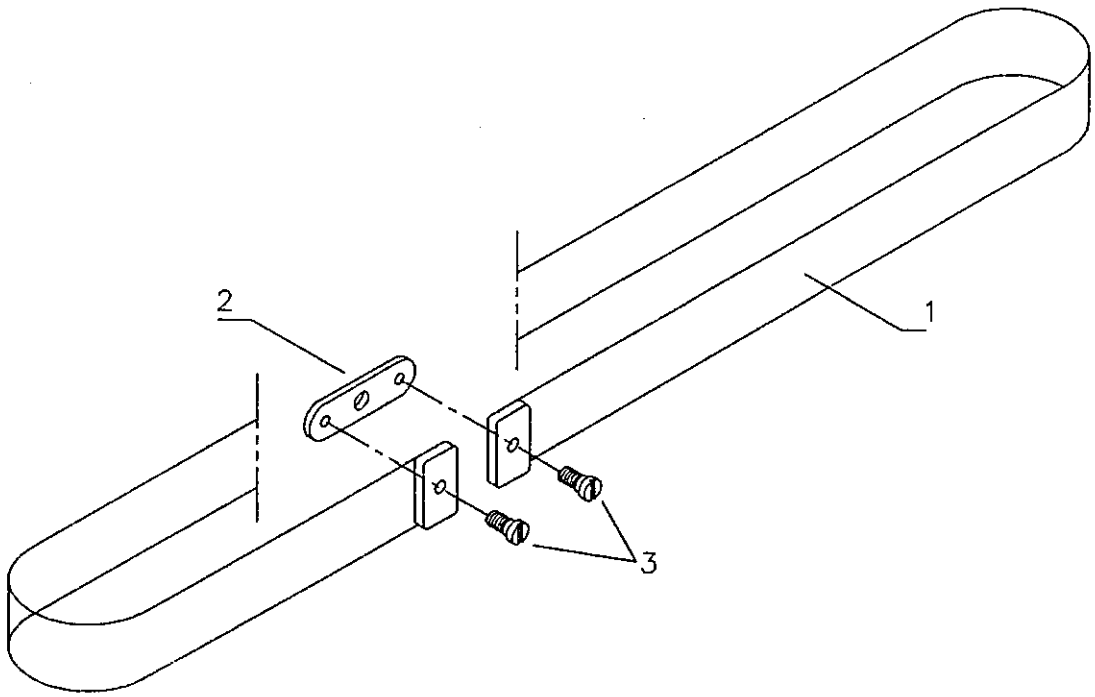

Figure 12.

Ref.	Description	Partnumber	Qty
1	Steel belt XP620/621C	DE-44822A	1
1	Steel belt XP940/941C	DE-44822B	1
1	Steel belt XP1250/1251C	ME-12822	1
2	Belt set plate	DE-44185	1
3	Screw M3X4	DE-44118	1

Y-Motor & drive Assy XP-C

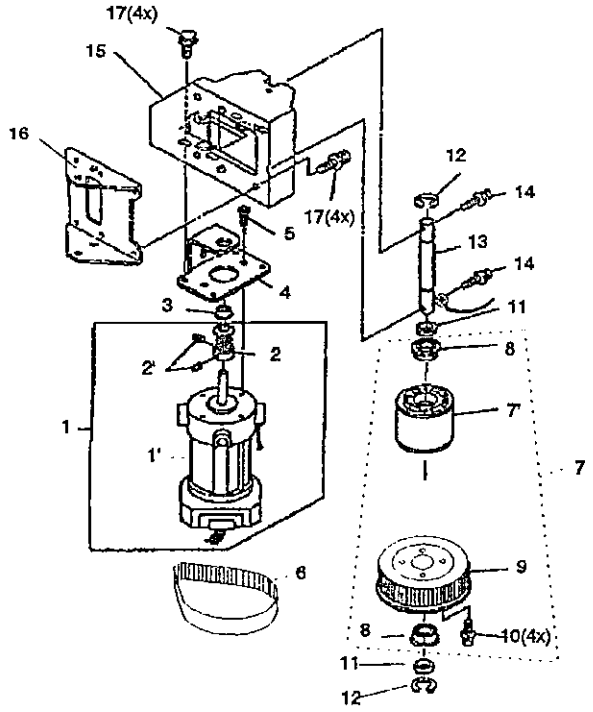

Figure 14.

Ref.	Description	Partnumber	Qty
1	Y-motor pulley Assy XP620C/XP1250C –	MY-44978	1
1'	Y-motor XP620C/1250C	DE-44753	1
1	Y-motor pulley Assy XP-940C	MY-44979	1
1'	Y-motor XP-940C	DE-44754	1
2	Pulley Assy	MY-44160	1
2'	Set screw M3X3	DR-4007-43352	2
3	Bearing	DE-44808	1
4	Flange	DE-44819	1
5	Screw M3X8	DR-4001-43329	2
6	Y-drive belt	DE-44157	1
7	Drive pulley Assy	MY-44176	1
7'	Drive pulley	DE-48459	1
8	Bearing	DE-44365	2
9	gear	DE-44175	1
10	Screw M3X10	DR-4001-43475	4
11	Spacer	DE-44177	2
12	E-ring #8	DR-4014-44546	2
13	Shaft	DE-44818	1
14	Screw M3X12	DR-4005-43581	2
15	Y-gearbox	DE-20570	1
16	Set plate Y-gearbox	DE-44817	1
17	Screw M4X10	DR-4001-43317	8

Return pulley XP-C

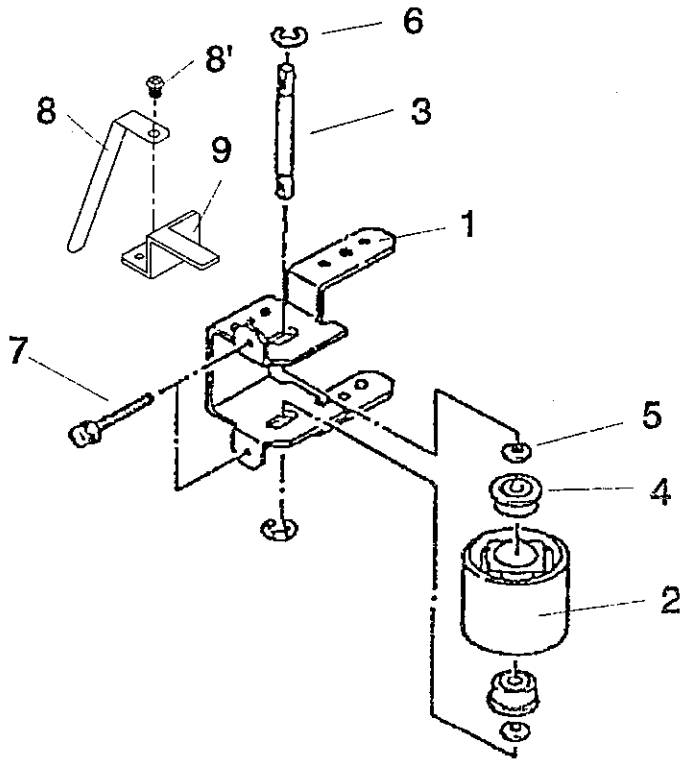

Figure 15.

Ref	Description	Partnumber	Qty
1	Pulley bracket	DE-31561	1
2	Pulley	DE-44180	1
3	Shaft	DE-44820	1
4	Bearing	DE-44181	2
5	Spacer	DE-44183	2
6	E-ring #5	DR-4014-43315	2
7	Screw M3X30	DR-4001-43727	2
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8	Ground plate	DE-45117	1
8'	Screw M3X4	DR-4001-43993	1
9	Bracket	DE-44821	1

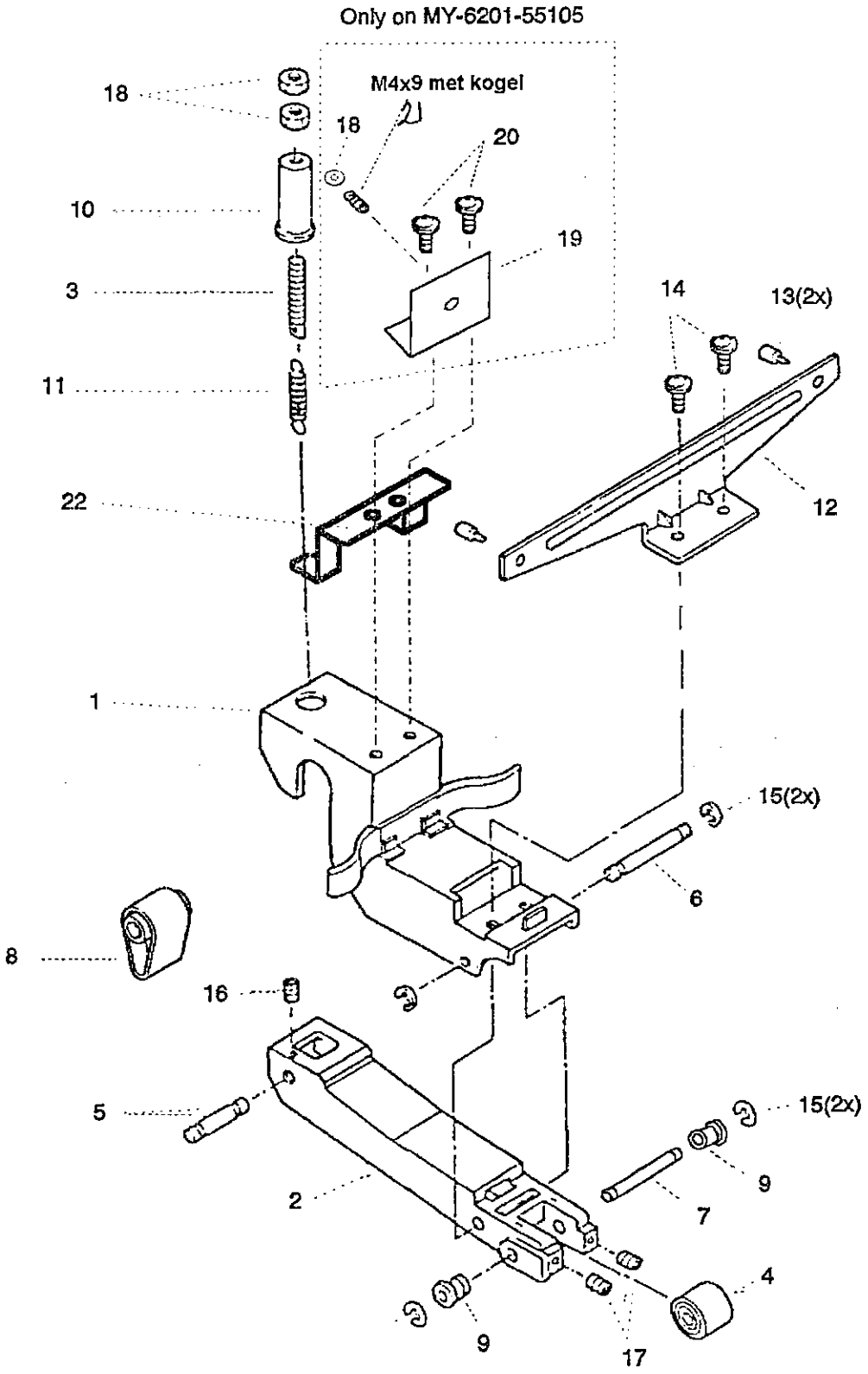

Figure 16. Pressure roller Assy XP-C.

Pressure roller Assy XP-C

Pressure roller Assy without pos. indicator : MY-6200-55105

Pressure roller Assy with position indicator : MY-6201-55105

Ref	Description	Partnumber	Qty
#	Pressure roller Assy without pos. indic.-	MY-6200-55105	1
1	Pressure base	DE-31562B	1
2	Pressure arm	DE-31563	1
3	Pressure adjust. shaft	DE-42053	1
4	Pressure roller	DE-44190	1
5	Spring shaft	ME-44191	1
6	Pivot shaft	DE-44193	1
7	Pressure roller shaft	ME-10026	1
8	Cam	DE-44825	1
9	T-spacer	BR-40100	2
10	Pressure spacer	DE-45108	1
11	Spring	DE-45673	1
12	Slide plate	ME-10993	1
13	Slide pin	DE-45829	2
14	Cap screw M3X5	DR-4001-44794	2
15	E-ring E-3	DP-3022-40153	4
16	Set screw M3X3	DR-4007-43352	1
17	Set screw M3X5	DR-4007-43370	2
18	Nut M4	DR-4010-41280	2(3)
#	Pressure roller Assy with position indic.	MY-6201-55105	1
-	Pressure roller Assy	MY-6200-55105	1
19	L-plate	ME-10028	1
20	Screw M3X8	DR-4001-43329	2
21	Ball screw M4X9	ME-10029	1
--	---	---	-
22	Carrier Pressure shaft (Middle pressure roller XP-1250/1251C only)	ME-10103	1

Pressure roller UP/DOWN Mechanism XP-C

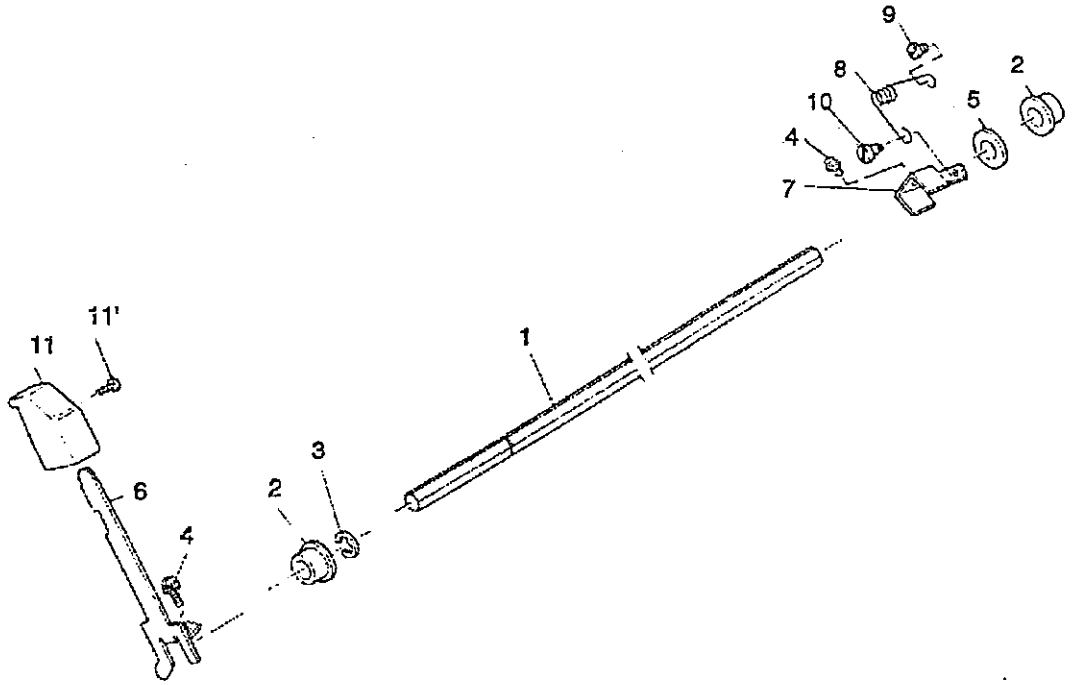

Figure 17.

Ref.	Description	Partnumber	Qty
1	Pressure shaft XP620/621C	DE-44777A	1
1	Pressure shaft XP940/941C	DE-44777B	1
1	Pressure shaft XP1250/1251C	ME-12777	1
2	Roller Pressure shaft	DE-44776	2
3	E-ring #8	DR-4014-44546	1
4	Screw M3X8	DR-4001-43329	2
5	Spacer	BR-11218	1
6	Pressure lever	DE-45468	1
7	Bracket for spring	DE-45469	1
8	Spring	DE-45470	1
9	Screw for spring	DE-45471	1
10	Screw for spring	DE-45472	1
11	Knob pressure lever	DE-31580	1
11'	Screw M3X6	DR-4005-43728	1

Gearbox assy XP-C

\# MY-6201-54200 : Gearbox for XP-C without plot roll.

\# MY-5005-54200 : Gearbox for XP-C with plot roll.

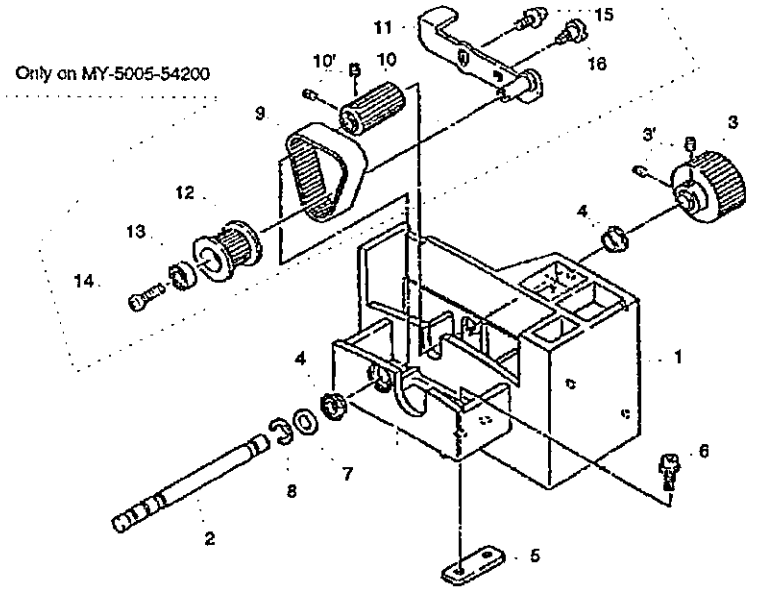

Figure 18.

Ref.	Description	Partnumber	Qty
#	Gearbox (No plot roll)	MY-6201-54200	1
1	Base gearbox	DE-20569	1
2	Drive shaft	DE-44802	1
3	Drive pulley	DE-44804	1
3'	Set screw M3X3	DR-4007-43352	2
4	Bearing	DE-45506	2
5	Srewplate	DR-2164-41836	2
6	Screw M4X8	DR-4008-44543	4
7	Spacer	BR-10703	1
8	E-ring E-6	BR-31060	1
	----	-----	
#	Gearbox (plot roll)	MY-5005-54200	1
-	Gearbox no plot roll	MY-6201-54200	1
9	X-transfer belt	DE-44156	1
10	Pulley	DE-44801	1
10'	Set screw M3X3	DR-4007-43352	2
11	Belt tension Lever	DE-44805	1
12	Idler pulley	DE-44806	1
13	Bearing	DR-4015-44660	1
14	Screw M4X10	BM-6000-604010	1
15	Screw M4X8	DR-4001-43396	1
16	Screw M4X3	DE-44118	1

X-motor Assy XP-C

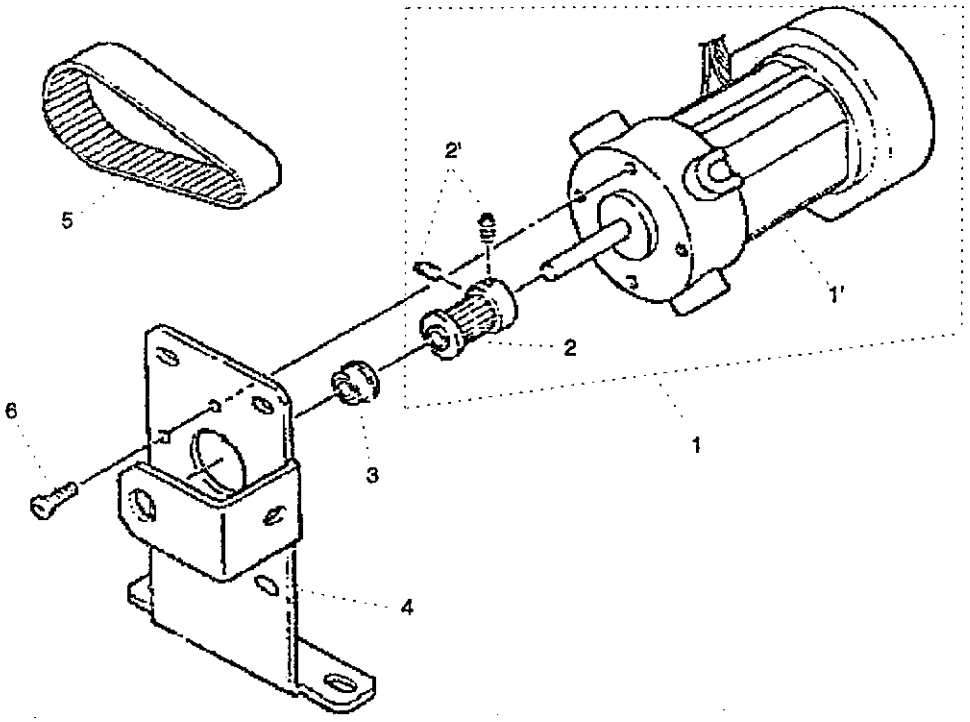

Figure 19.

Ref.	Description	Partnumber	Qty
1	X-motor pulley Assy XP620/1C XP1250/1C	MY-44976	1
1'	X-motor XP620/1C 1250/1C	DE-44751	1
1	X-motor pulley Assy XP-940/1C	MY-44977	1
1'	X-motor XP-940/1C	DE-44752	1
2	Pulley Assy	MY-44160	1
2'	Set screw M3X3	DR-4007-43352	2
3	Bearing	DE-44808	1
4	Flange	DE-31558	1
5	X-drive belt	DE-44807	1
6	Screw M3X8	DR-4001-43329	2

Stocker base Assy XP-C

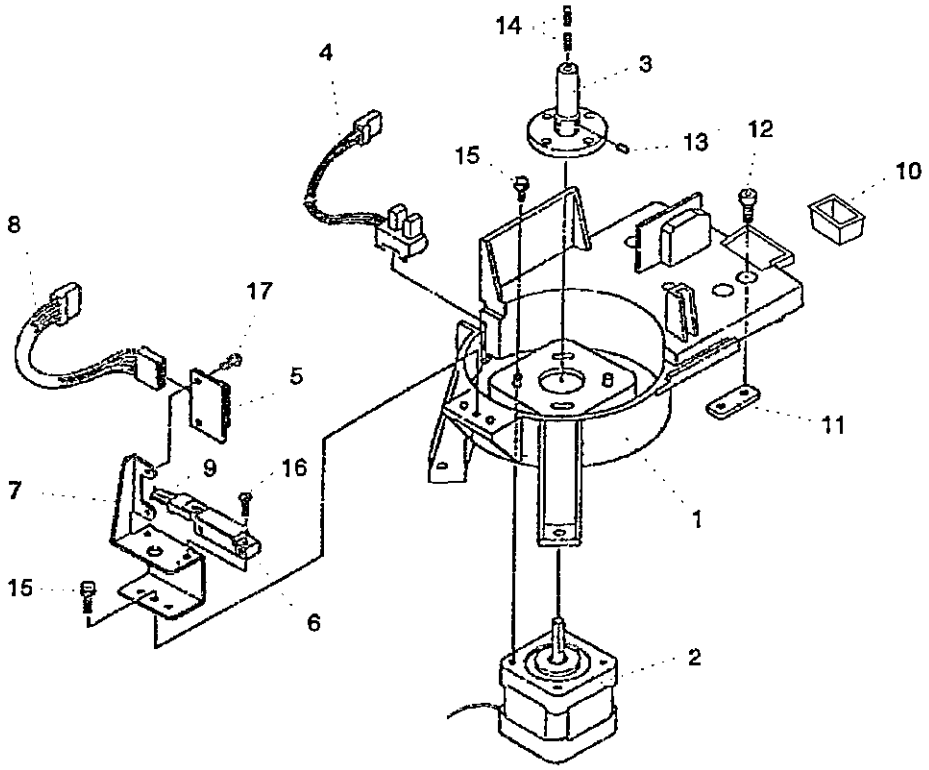

Figure 20.

Ref.	Description	Partnumber	Qty
1	Stocker base	DE-10359	1
2	Motor	DE-44759	1
3	Stocker foot	DE-44095	1
4	Stocker position sensor	DE-44764	1
5	Pen ID sensor Pcb	DE-44103	1
6	Pen presence sensor	E-PS-R50LA	1
7	Sensor bracket	DE-44093	1
8	Cable J405 — Term. Pcb	DE-44762	1
9	Cable J408 → Term. Pcb	DE-44765	1
10	Pencil tray	DE-45672	1
11	Screwplate	DR-2164-41836	1
12	Screw M4X8 hex	DR-4008-44543	2
13	Set screw M3X3	DR-4007-41200	2
14	Set screw M3X5	DR-4007-43370	2
15	Screw M3X8	DR-4001-43329	5
16	Screw M3X8.5	DS-1054-40883	1
17	Screw M3X5	DS-3151-41580	2

Stocker Assy XP-C

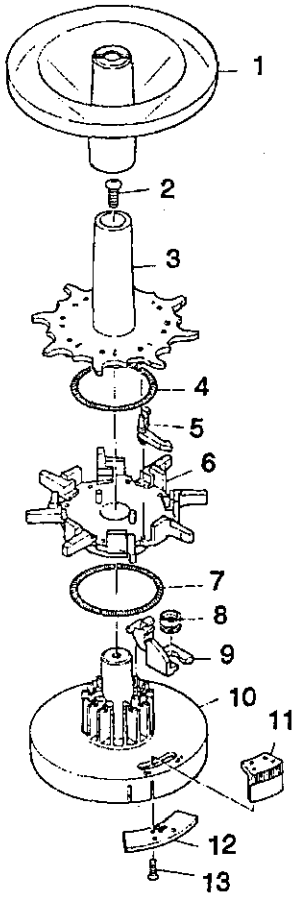

Figure 21.

Ref.	Description	Partnumber	Qty
#	Stocker Assy	DE-44950	1
1	Stocker cover	DE-44831	1
2	Screw M4X8	DR-2340-41777	1
3	Upper holder	DE-31263	1
4	Spring E	DE-42073E	1
5	Finger	DE-44044	8
6	Lower holder	DE-31264	1
7	Spring F	DE-42073F	1
8	Pen cap rubber	DE-44046	8
9	Pen cap arm	DE-44045	8
10	Base holder	DE-31262	1
11	Shutter pen recognition	DE-44043	1
12	Shutter guide	DE-44042	1
13	Screw M2X5	DR-4002-44296	1

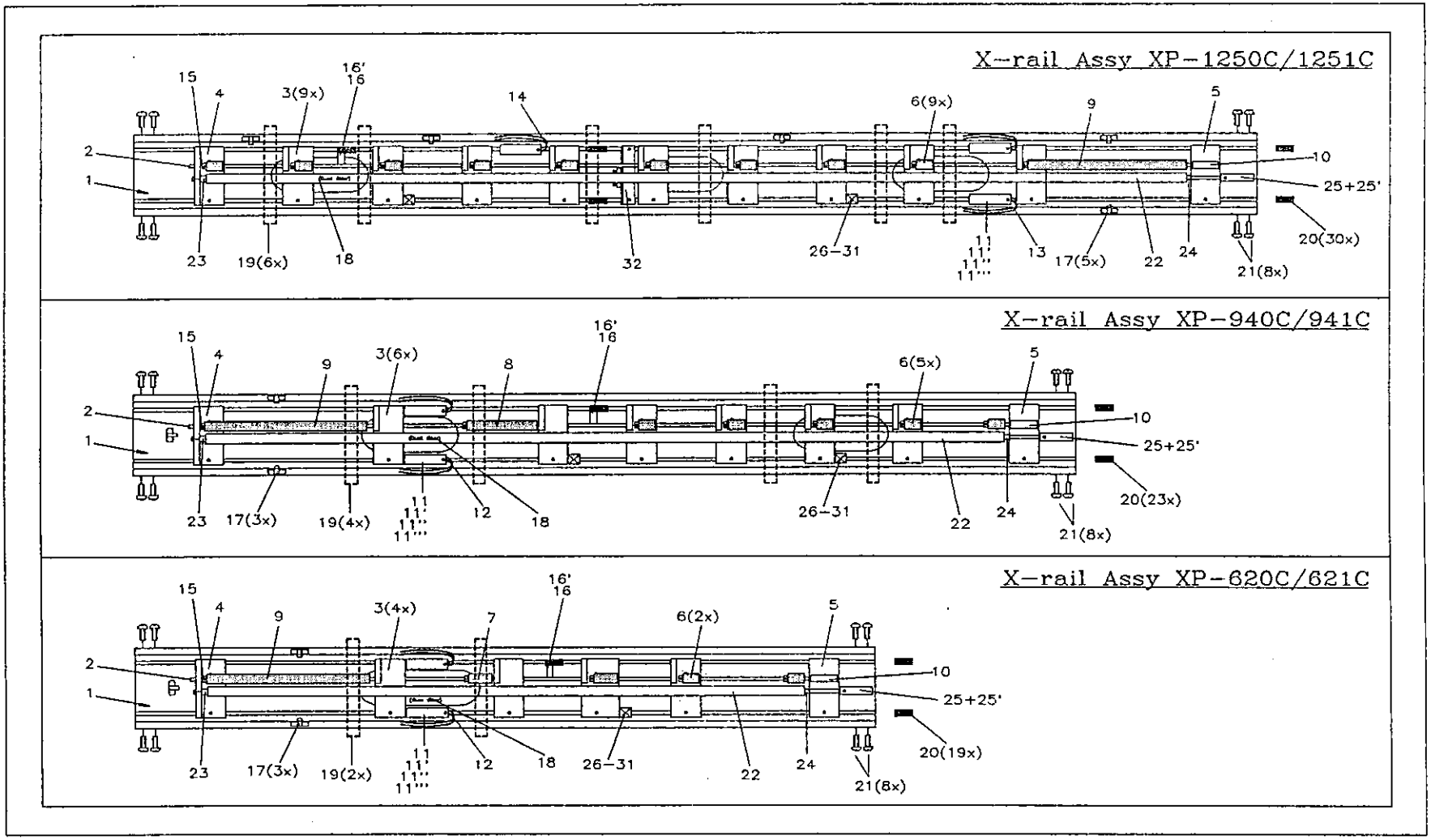
X-rail Assy XP-1250C/1251C
15
4
3(9x)
16'
16
14
6(9x)
9
5
2
1
10
25+25'
20(30x)
23
19(6x)
18
32
26-31
11
11'
11''
11'''
13
17(5x)
22
24
21(8x)
X-rail Assy XP-940C/941C
15
4
9
3(6x)
8
16'
16
6(5x)
5
2
1
10
25+25'
20(23x)
23
17(3x)
19(4x)
11
11'
11''
11'''
12
18
26-31
22
24
21(8x)
X-rail Assy XP-620C/621C
15
4
9
3(4x)
7
16'
16
6(2x)
5
2
1
10
25+25'
20(19x)
23
17(3x)
19(2x)
11
11'
11''
11'''
12
18
26-31
22
24
21(8x)

Figure 22.

X-rail assy XP-C

Ref.	Description	Partnumber	Qty
1	X-rail 620/621C	DE-20695A	1
1	X-rail 940/941C	DE-20695B	1
1	X-rail 1250/1251C	ME-12550	1
2	Drive shaft 620/621C	ME-10604	1
2	Drive shaft 940/941C	ME-10614	1
2	Drive shaft 1250/1251C	ME-10624	1
3	Roller Holder	DE-31307B	4-6-9
4	Roller Holder A	ME-31306	1
5	Roller Holder D	ME-31555	1
6	Grid roller 14mm	DE-44142	2-5-9
7	Grid roller 20mm	DE-44143	2-0-0
8	Grid roller 60mm	DE-44799	0-1-0
9	Grid roller 136mm	DE-46550	1-1-1
10	Shaft connector	DE-44809	1
10'	Set screw M4X4	DR-4007-41278	4
11	Optical Sensor	E-PS-R50LA	2-3
11'	Sensor bracket	ME-10164	2-3
11"	Screw M3X8.5	DS-1054-40883	2-3
11'"	Screw M4X6	DR-4008-41838	2-3
12	Sensor cable 620/1C/940/1C	MK-41763	1
13	Sensor cable R/F 1250/1C	MK-41700	1
14	Sensor cable Middle 1250/1C	MK-41701	1
15	Plastic spacer	DE-44145	1
16	Grounding plate	DE-45118	1
16'	Screw M4X8	DR-4001-43396	1
17	Cable guide	AE-91025	3-3-5
18	Dust filter	DE-45903	1
19	Airseal	DE-45127	2-4-6
20	Screwplate	DR-2164-41836	19-23-30
21	Screw M4X12	DR-4001-43340	8
	Plot roll models only		
22	Plot roll XP620C	DE-31557A	1
22	Plot roll XP940C	DE-31557B	1
22	Plot roll XP-1250C	ME-12557	1
23	Plastic spacer L	DE-44146	1
24	Plastic spacer R	DE-45036	1
25	Drive pulley Assy	MY-44801	1
25'	Set screw M3X3	DR-4007-43352	2
26	Support roller	DE-42473A	1-2-2
27	Support roller bracket	DE-44161	1-2-2
28	Spacer Support roller	DE-42051	1-2-2
29	E-ring	DP-1012-40093	1-2-2
30	Screw M3X2.5	DR-2400-42894	1-2-2
31	Screw M3X4	DR-4001-44088	1-2-2
32	Double roller support Assy (XP-1250C model only)	MY-1250-56500	0-0-1

Bracket Left & Bracket Right Assy XP-C

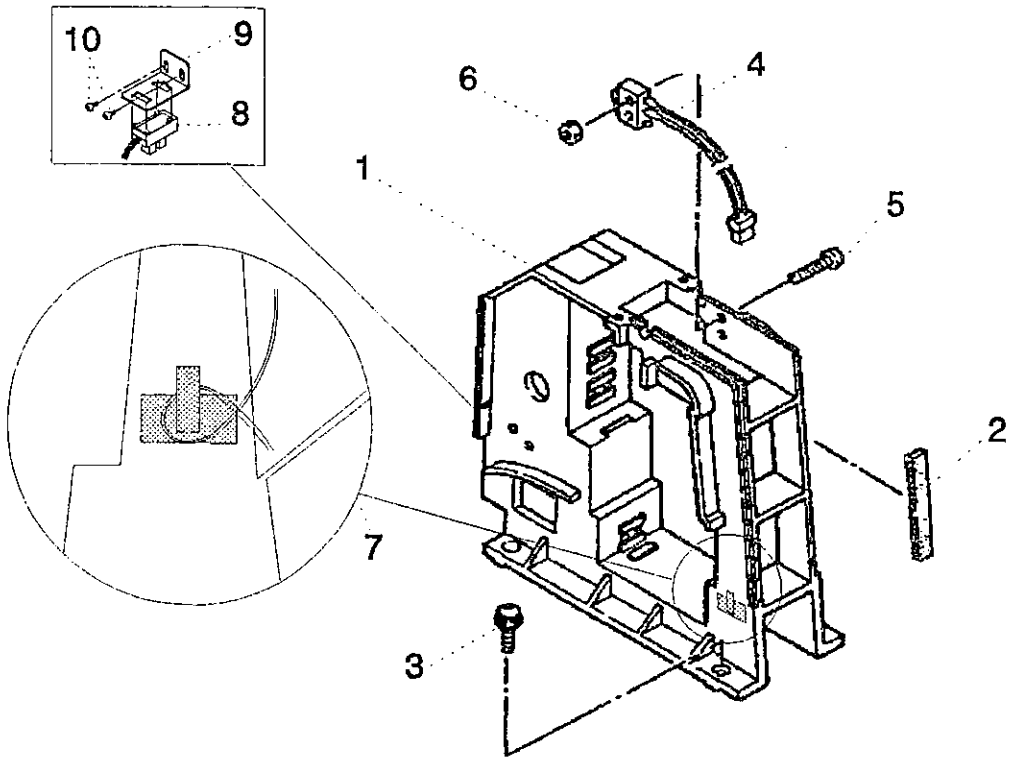

Figure 23.

Ref.	Description	Partnumber	Qty
#	Bracket Right Assy	MY-6200-56605	1
1	Bracket	ME-10357	1
2	Cushion rubber	DE-44846	1
3	Screw M4X16	DR-4001-44611	4
#	Bracket left Assy	MY-6200-56600	1
1	Bracket	ME-10357	1
2	Cushion rubber	DE-44846	1
3	Screw M4X16	DR-4001-44611	4
4	Cover sensor Assy	DE-44767	1
5	Screw M2.3X14	DR-4005-44612	2
6	Nut M2.3	DR-4010-43761	2
7	Cable guide	AE-91025	1
8	Sensor Pressure arm	DE-44766	1
9	Sensor bracket	DE-44797	1
10	Screw M3X8	DR-4001-43329	2

Base plate Assy XP-C

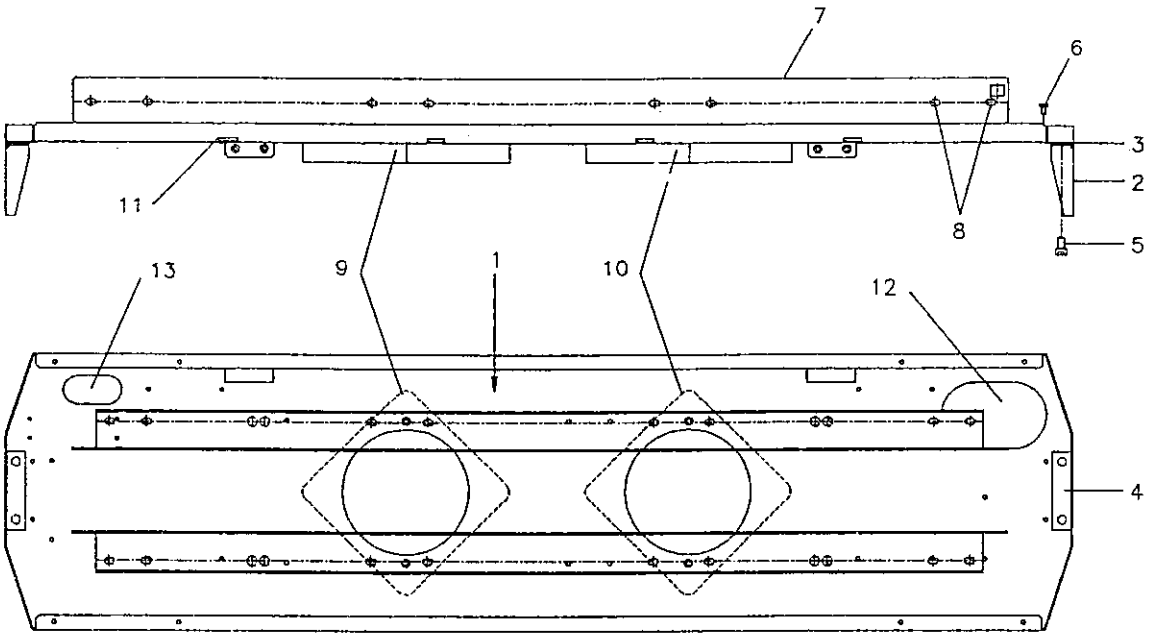

Figure 24.

Ref.	Description	Partnumber	Qty
1	Base plate 620/621C	DE-10356A	1
1	Base plate 940/941C	DE-10356B	1
1	Base plate 1250/1251C	ME-12356	1
2	Unit mounting bracket	ME-10087	2
3	Spacer plate	ME-10117	2
4	Nutplate	ME-10200	2
5	Hex bolt M8X12	BM-6000-608012	4
6	Screw M4X8	DR-4001-43396	4
7	Reinforcement plate 620/1C	ME-10616	2
7	Reinforcement plate 940/1C	ME-10617	2
7	Reinforcement plate 1250/1C	ME-12600	2
8	Hex bolt M4X8	DR-4008-445435	14-18-28
9	Fan 620/1C/940/1C/1250/1C	DE-44760	1-1-3
10	Fan XP940/941C	DE-44761	1
11	Speed nut	BR-90401	4-4-6
12	Cable protector long	DE-45386	1
13	Cable protector short	DE-45387	1

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CUTTING PLOTTERS - TECHNICAL TIP #2

Service Personnel and Distributors Only

All MUTOH XP-C Series Cutting Plotters shipped in the past do have one 95 mm wide grid roller and several other sized rollers.

In order to give the customer more flexibility to load media of different sizes, MUTOH will start very soon using even larger grid rollers (136 mm wide) (see attached pages).

The change-over from 95 mm gridrollers to 136 mm gridrollers will be done in combination with the change-over from painted steel metal front and rear platens to black anodised aluminium extrusions. The use of aluminium extrusions will give the XP-C machines an even more stable and robust construction.

In order to make your machine work with larger gridrollers, firmware changes were necessary. As soon as we will start shipping the modified machines, the new on-board ROMs will have the revision C 1.40.

This new ROM revision will be downwards compatible with existing machines. In fact, C 1.40 can be used on all older machines without any problem or other changes. However, please note that modified machines cannot use older ROM revisions (C 1.31 - C 1.30 - C 1.22 .....) as these will not recognise the 136 mm gridrollers.

In addition to the new ROM revision, we have changed the dip switch settings on the terminal board. In case your machine is equipped with 95 mm gridrollers, dip switch position N° 1 should be set to "ON". In case your machine is equipped with 136 mm gridrollers, this switch should be set to "OFF".

Please refer to the attached "Dip Switch Settings" sheet.

Of course, on all machines shipped, this dip switch setting has already been done at the factory. However, please bear in mind this technical tip in case you replace the terminal board !

Note :

Using incorrect dip switch settings will result in a "PINCH ROLLER ERROR".

****

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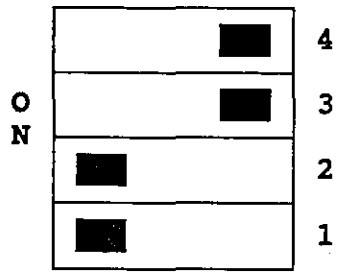
TERM BOARD DIP SWITCH SETTINGS

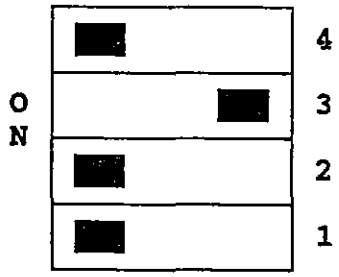
GRIDROLLER SIZE 95 MM

(CAN USE ALL ROM REVISIONS)

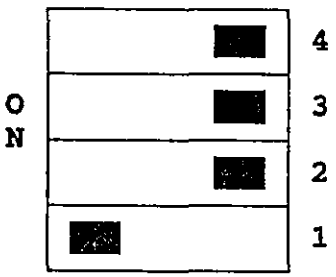
XP-620CR



XP-940CR



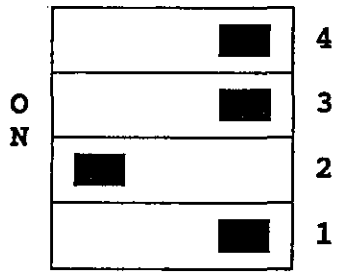
XP-1250AR



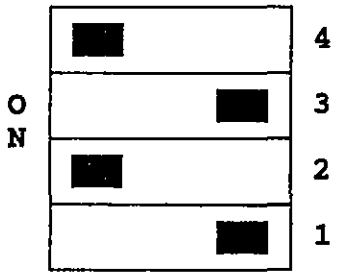
GRIDROLLER SIZE 136 MM

(CAN ONLY BE USED WITH ROM REV. C1.40 OR GREATER)

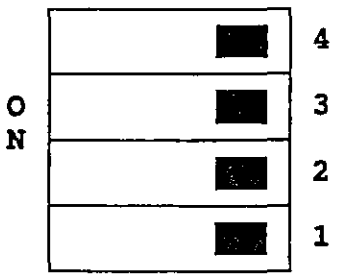
XP-620CR



XP-940CR



XP-1250AR



POSITIE GRIDROLLERS XP-62xC

POSITIE GRIDROLLERS XP-94xC

POSITIE GRIDROLLERS XP-125xC

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CUTTING PLOTTERS - TECHNICAL TIP #3

UPGRADING YOUR MACHINE WITH A NEW FIRMWARE REVISION

Service Personnel and Distributors Only

Whenever you are planning to upgrade your cutting plotter from one revision to another (higher) revision, please follow below steps :

1. Make sure the POWER is OFF and that the machine is completely disconnected from any power source.

2. Open the PCB box and gently remove the old Eproms from the main board (4 pcs). Do not touch the mainboard with sharp tools as this may damage the circuit layout.

3. Plug in the new eproms by paying attention to the following items :

   3.1. Make sure you plug in the correct eproms in the correct place. To help you, each Eprom is marked with a label : 00 - 01 - 10 or 11. The same marking is printed into the PC-board.

   3.2. Also make sure that you insert the eproms in the correct orientation. This is visible as a small half circle in the outline of the package :

   The same printing appears on the PC-board.

   3.3. While inserting the new Eproms, make sure that all 40 pins of the chip are pushed into the Eprom sockets.

4. Close the PCB-box (print box).

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5. Connect the power cable and switch the power ON.

6. After the initialisation procedure is finished, push the "MENU-ARROW" keys until you find the TESTING menu.

7. Push F4 (INIT) to reinstall the factory default values.
(Without reinitialisation, your machine may not function properly).

8. Check all user parameters again (communication, ...)

9. Your machine is now ready for operation.

NOTE :

As you have to reinitialise your machine, it is a good idea to plot out all user settings first (only available from Rev. C 1.30 onwards).

Before starting the job :

- switch the power ON.
- insert an A3-size sheet of paper
- insert a pen or pencil in stocker position N° 1
- load the media
- go to the "TESTING" menu and choose the plot option.

After upgrading your machine, check all user settings again.

Part Numbers :

1 set of Eproms : EPROM XP-C
(Please indicate the requested Revision level: C x.xx).

****

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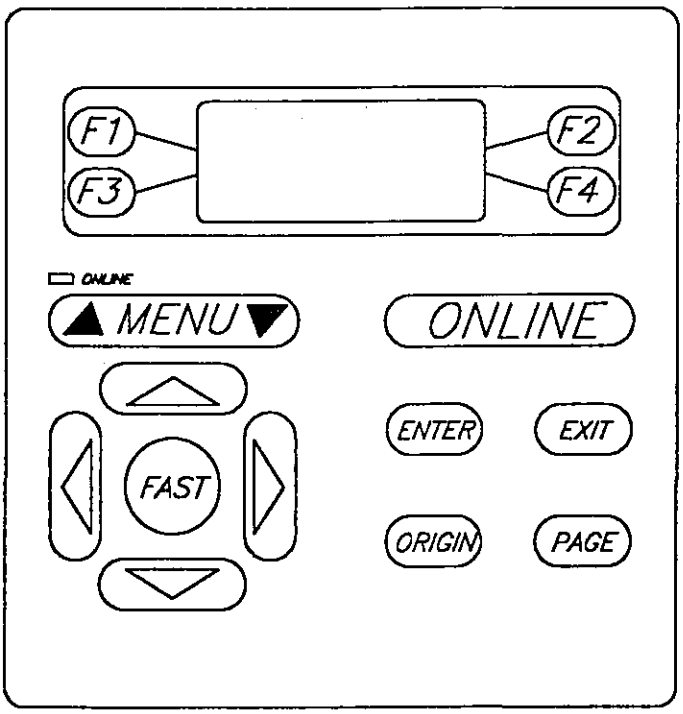
CUTTING PLOTTERS - TECHNICAL TIP #4

HOW TO INSTALL AND USE THE SIMPLIFIED XP-C KEYBOARD

Service Personnel and Distributors Only

In order to make the operation of the MUTOH XP-C cutting plotters easier, a new simplified keyboard has been developed (see figure below)



Normally, this new keyboard will be factory-installed and set up.

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In case you like to install this keyboard yourself or in case you would like to change the operating language of your cutting plotter, please follow the procedure below.

1. INSTALLATION

1.1. Make sure the POWER is OFF and that the machine is disconnected from any power source.

1.2. Open the PCB-box and make sure that Rom Revision C 1.40 or greater is installed. If so, gently remove the panel board cable out of the mainboard (J21).

1.3. Replace the complete old panel assembly with the new one (do not attempt to only replace the touch panel while keeping the panel PC board).

1.4. Connect the new panel cable to the mainboard (J21) and close the PC-box.

1.5. Connect the power cable to the machine but keep the power switch "OFF".

1.6. Hold down following keys while switching the power "ON"

JOG ▷ + "EXIT" + "ENTER"

1.7. The cutting plotter is entering the specialised diagnostics mode and the new keyboard is automatically activated.

1.8 Unless you like to do some other diagnostic tests, you can now switch off your machine again and your keyboard is installed.

1.9. Next time you switch the power on, under normal operation, your machine will still remember that the new keyboard was previously installed.

Note :

If your machine is not equipped with ROM revision C 1.40 or greater, you have to install new eproms as well !

2. DIAGNOSTICS MODE

With the "old" keyboards, you had to enter the diagnostics mode by holding down the "0", "Decimal (.)" and "Minus (-)" keys while turning the power ON.

With the "new/simplified" keyboard, you can do this by holding down the JOG ▷ + "EXIT" + "ENTER" keys during the power ON sequence.

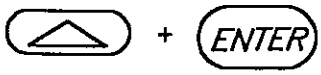
3. CHANGING THE OPERATION LANGUAGE

Your cutting plotter can work in three different languages or in the British/U.S. dimension mode.

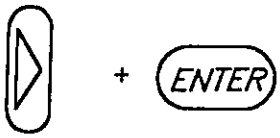
To activate those different languages/modes, follow below steps :

3.1. Turn the power OFF.

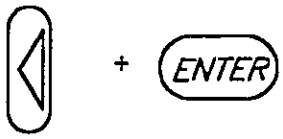
3.2. Turn the power ON while simultaneously pressing one of the following combinations :



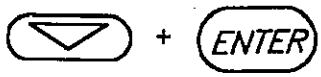
: German Language Metric Units



: French Language Metric Units



: English Language - Metric Units



: English Language - British/US units

After switching OFF the power again, the internal memory of your machine will keep remembering which mode you previously selected.

4. ACTIVATING - DISACTIVATING OPERATING MENUS

Turn the power ON while simultaneously pressing the "ORIGIN" and "PAGE" button.

The following menu will appear on the display :

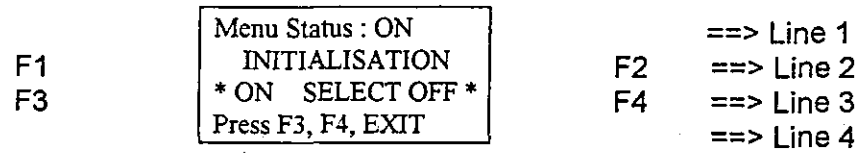
F1 F3

INSTALLATION	
* SELECT	ALL*
* VIEW	

F2 F4

F1 : SELECT

When pressing F1, the following menu appears :



Line 1 : Shows the current status of the menu
Line 2 : Shows the name of the menu (there are 10 menus under "LOCAL"

Line 3 : Asks to choose the menu status => ON (Press F3), OFF (press F4). When F3 or F4 is pressed, a new menu will appear on line 2.

Line 4 : When pressing EXIT, all changes that have been made are discarted. A message will appear on the display : "NO CHANGES MADE".

==> Pressing ENTER saves all changes that have been made !! <==

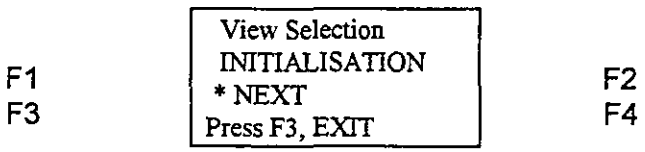
Message : "NEW MENU INITIALISATION ACTIVE".

F2 : ALL

When selecting this option, ALL menus will be activated. The following message appears : "ALL MENUS ARE ACTIVE".

F3 : VIEW

This option allows the user to view the current menu installation. It shows only the activated menus. F3 shows the next menu name on line 2. Pressing EXIT takes you back to the main menu.



After making the selection, switch the power OFF to restart.

5. NORMAL OPERATION OF THE MACHINE WITH THE NEW KEYBOARD

To operate the machine with the new keyboard, please refer to the new user guide

Part Number AP-75620, Revision C 1.40 dd. 14/03/1995.

6. PART NUMBERS

"Old" Keyboard - panel assy : DE-44975

"New" Keyboard - panel assy : EY-6200-50010

EPROM set : EPROM-XPC
(Please indicate the requested version : C x.xx).

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